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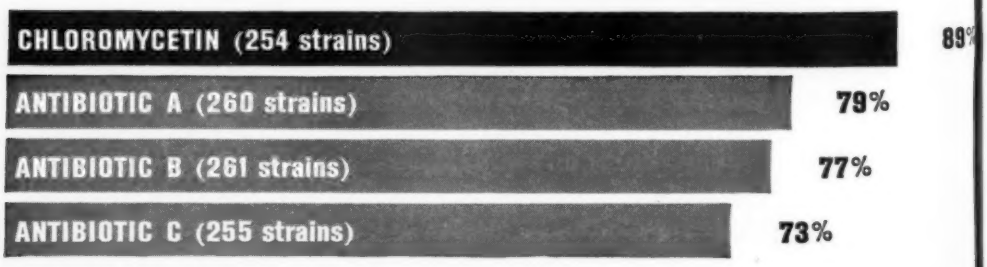

*Adapted from Leming & Flanigan.[3]

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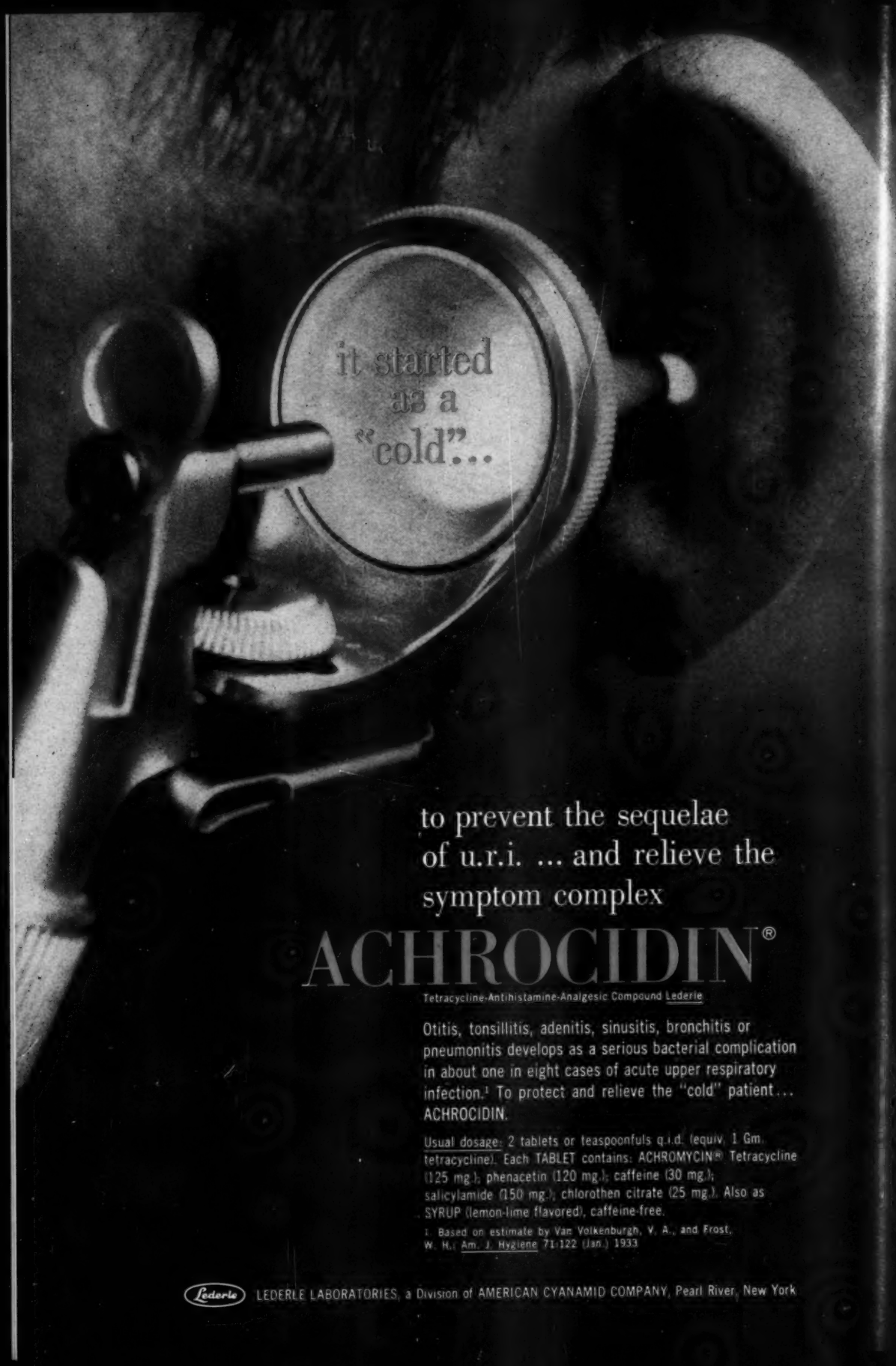

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1. Based on estimate by Van Volkenburgh, V. A., and Frost, W. H.: Am. J. Hygiene 71:122 (Jan.) 1933

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Original Articles

ARIZONA MEDICINE

VOL. 17, NO. 4 APRIL, 1960

Laryngeal Carcinoma in Situ

by

Arthur Purdy Stout, M.D.*

New York, New York

"THANK you. It's a pleasure to be here with you, and it's a great pleasure also to find my old associate at Columbia, Dr. Golden. He and I worked together upon different problems for many years. He has just been talking to you about the diagnosis of cancer of the larynx in the stages where it has grown sufficiently large either to destroy tissue or to make a mass which can be demonstrated.

"There are stages of cancer in the larynx in which no obvious mass can be seen and there is no invasion of cartilage or deeper soft tissues. It is about that variety of cancer, particularly the non-invasive form, I would like to speak to you this afternoon.

"No one today can possibly have avoided hearing about carcinoma-in-situ. I think it is important to emphasize two facts: one, that carcinoma-in-situ can occur in any surface mucous membrane in any part of the body and, of course, in skin, too; and second, that it behaves and looks differently in different parts of the body. You don't want to get the impression from the information that has been furnished by cancer of the cervix uteri that in-situ- or pre-invasive cancer — call it what you will — occurs and behaves in exactly the same way in other parts of the body. When it occurs in the larynx it may cause no symptoms at all, or there may be a slight hoarseness and perhaps a cough. When the laryngologist looks down at the vocal cords and other parts of the larynx he may see nothing at all other than a little redness or a little roughness. The vocal cords move without impediment and everything seems to be relatively innocuous. Laryngologists have one good trait from the point of view of pathologists; they do not hesitate to take biopsies of suspicious areas in the larynx. That has given us an opportunity to determine the occurrence of carcinoma-in-situ in the larynx and to find out some of the facts about it. In the first place, its occurrence differs from that in the cervix in that it develops at the same average age as does invasive cancer. The average age for carcinoma-in-situ in the cervix is ten years younger than for invasive carcinoma. As in the cervix, carcinoma-in-situ in the larynx may involve one small patch or there may be

*Extracted from address to Cancer Seminar, Tucson, Arizona, 23 January 1958.

multiple areas of involvement. It cannot be distinguished clinically from early superficial invasive cancer before fixation of the cord occurs because the symptoms and the signs are equally slight.

"We had 312 cancers of the larynx, and in 48 of them there was carcinoma-in-situ. In 29 of these there was no invasion, in nine there was limited invasion, and in 10 there was marked invasion. Let us see what happened, as far as is known, to the 29 cases in the 'no invasion' group. Nineteen of them were alive and well at last report; 15 less than five years, four between five and ten years. Six of them had died of intercurrent disease without evidence of tumor. One patient died while being treated by radio-therapy from inability to swallow after the fifth or sixth month. Whether or not that was a recurrence we do not know because there was no further biopsy or autopsy. The other five died at ages varying from 67 to 85 years of the diseases of old age, and with no evidence of recurrence. Two died with laryngeal carcinoma. These probably had invasive cancer in some part of the larnyx that was not biopsied. Two were lost to the follow-up. The nine patients with limited invasion in the cords all had a good result. Where there was marked invasion most of the patients had a bad result — just as you might expect.

"The incidence of non-invasive carcinoma of the larynx is just the same as the incidence for invasive cancer. It is markedly predominant in males; 12:1 in all the cases of carcinoma of the larynx and 16:1 in the in-situ carcinomas.

"I would like to speak one word about the handling of these patients. Because of the fact that when there are multiple areas of involvement of the mucous membrane of the larynx, generally the removal by surgery of a cord or a single patch will not suffice to cure. It is my impression that radio-therapy may be better than surgery for non-invasive laryngeal carcinoma. I hope Dr. Collins will make some remarks about this when his time comes. However, in my opinion the larynx should not be treated by radio-therapy unless the therapist is fully experienced with treating that region. Otherwise, disaster may result."

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Pre - And Postnatal Irradiation Hazards For Infants And Children*

Clifford G. Grulee, Jr., M.D.

New Orleans, Louisiana

DEVELOPMENT of our knowledge of x-ray and other forms of irradiation dates only from November 8, 1895, and is an exciting though often tragic chapter in man's scientific progress. Roentgen did not know what he was dealing with when he noticed the glowing platinocyanide screen and discovered that the rays which were produced penetrated a deck of cards, a door, and a thick book. A great deal has been learned since that time concerning the physical characteristics of x-rays and the technical details of their use, but we are still relatively ignorant concerning many of their biologic effects.

Furth(1) has divided man's experience with irradiation into three periods. The first preceded the discovery of Roentgen rays and included the experiences of Bohemian miners who very frequently died of cancer of the lungs from the inhalation of dust while working with as yet unknown radioactive ores. Similar experiences were encountered in Colorado during the second half of the nineteenth century. The second period came immediately following discovery of x-rays, when nothing was known of the dangers associated with their use. Within a year of Roentgen's original work, x-rays had been adapted to use in fluoroscopy. No screening or other types of protective devices were used since none were considered necessary. By 1897, the first case of radiation sickness had occurred. Paterson states that within five years 170 cases of radiation injury were on record, and that by 1911, 54 cases of radiation induced cancer of the skin had been reported. One hundred radiologists had died from the effects of overexposure to x-ray by 1922, and finally, in 1927, Muller first described an increased frequency of gene mutations from radiation. The third, and current era of man's experience. with radiation, is characterized by the rather phenomenal safety record thus far established in the rapidly expanding use of radioisotopes in therapy, research and industry. It is the perpetuation of this record which constitutes one of the most critical tests of self-control ever faced by mankind.

Thus far, background radiation has been variously estimated to contribute a cumulative dose of between 3.1 r and 4.3 r over a period of 30 years and atomic explosions occurring between 1945 and 1955, according to Libby, have contributed an average exposure in the United States of less than 0.1 r or a dosage rate of 0.001 r per person per year. Because exposure to radiation is being increasingly used in medicine and because this is amenable to intelligent control by radiologists and other physicians, there has recently been a great deal of emphasis on the use and abuse of therapeutic and diagnostic x-ray and other forms of irradiation. Unforunately, several of the serious effects of ionizing radiation have been recognized in infants who were exposed either before birth or during early postnatal life.

The biologic effects of ionizing radiation are either immediate, prompt, or delayed sometimes for very long periods of time. The immediate effects, primarily erythema of the skin in the

*Presented before the Ogden Surgical Society, Ogden, Utah, May 22, 1959.

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exposed area, are no longer inadvertently encountered, and do not constitute a major problem in diagnostic radiology. Similarly, radiation sickness can be anticipated as a calculated risk in the relatively massive irradiation of certain malignant diseases in children but, as an accidental occurrence, has been eliminated. There is, however, considerable variation in individual tolerance to radiation, and, as a consequence, the standards of radiology must be based on the range of tolerance of the most susceptible. Further, the damage produced by ionizing irradiation can be catastrophic early in fetal life and, in general, the younger a fetus or infant is at the time of exposure, the greater the injury that will result from a given dose. Generally speaking, stem cells, cells undergoing transition into specific types, and rapidly growing tissues are most severely affected. As quoted by Robinow and Silverman(3), the Russels have suggested that serious fetal injury can result from as little as 25 r of radiation and Hempelman has demonstrated that one-fourth of an erythema dose over epiphyseal cartilage in infants or one-half of the same dose in older children will result in stunting of growth. In the past, irradiation of tubercular joints and in rare instances even repeated exposure of children to poorly engineered and screened fluoroscopic machines in shoe fitting have resulted in growth disturbances. Some reassurances are available in the studies of Neuhauser(4) with respect to effects of radiation on the growing spine in children. He found that an epiphysis must be exposed to more than 600 r to show growth retardation, and then, even when contour irregularities of the vertebra became apparent with dosages in excess of 2,000 r in children two years of age or younger, the stunting in longitudinal growth was so slight as to be barely detectible. At least it would seem that no immediate threat to growth exists in the exposures of the ordinary infant and child to necessary diagnostic radiology.

The genetic effects of irradiation in man are extremely difficult to evaluate. Many mutations are lethal and result in fetal wastage during intra-uterine development. These are often confused with failures to conceive, miscarriages, or abortions from other causes. It is important to realize that a mutation does not necessarily produce a physical monstrosity. In fact, mutational changes often involve some metabolic process such as an enzyme system. Further, some may be beneficial to the organism. All persons are not similarly susceptible to radiation injury and many local conditions modify the response of the cells to it. Among these are pH, oxygen tension, and temperature.

The effect of radiation injury on germ cells is cumulative and permanent in contrast to the considerable degree of recovery shown by somatic cells after similar injury. This is of some importance since a large single dose of radiation received by the body and affecting both germ and somatic cells may be less well tolerated by somatic cells than fractionated doses given over long periods of time which would not produce obvious somatic changes but which would produce progressively more severe germ cell damage.

All effects of genetic mutation do not show up immediately, but rather may be delayed for several generations if recessive characters are involved. It is also important to remember that radiation does not produce unique alterations but merely an accelerated rate of appearance of mutational changes. However, since the life span of man is relatively lengthy, convincing data on radiation induced mutations will not be available for many years.

There are several types of ionizing radiation and all can exert genetic effects. Electro-magnetic radiations are oscillating, do not have mass, and penetrate tissue in inverse proportion to their wave lengths. X-rays are on the short end of the spectrum of electro-magnetic radiations and infrared are on the long end. The other general type of ionizing radiation is particulate and has origin either in naturally occurring radioactive ores such as thorium, radium, et cetera, or is produced by man-made devices such as the cyclotron or the betatron. Alpha, beta and gamma rays and neutrons are particulate radiation and have varying abilities to affect human tissues but all are potentially more dangerous in this regard than are x-rays. The penetrating ability of particulate radiations is dependent upon the mass and the speed of the particle concerned. Beta rays are stopped by several inches of moist air or even by the keratin of the skin. Although it is usually stated that beta rays have 1,000 times the ionizing ability and alpha rays 100 times the ionizing ability of x-rays, it is now possible to vary the energy level of any of these forms of radiation and thus increase or decrease

their penetrance. Neutrons, though they are not ionized themselves, cause the splitting off of electrons when they are absorbed by any substance and thus may produce damaging ionization. Generally speaking, the neutrons have a relative biologic effectiveness eight times that of x-rays. Muller has reported that the mutogenic effect of a given dose of x-ray, alpha, beta or gamma radiation is similar. The Russels and Mackey have found, however, that gamma rays and fast neutrons effect a greater mutation rate than other forms of radiation.

Two mechanisms probably operate to produce genetic effects. In the cells directly affected by ionizing radiation there may be chromosome breakage. In many instances this leads to the death of the cell, but there may be translocation of chromosome material with cell survival and resulting mutations. The second hypothesis assumes that cells not directly injured may be variously affected by chemical changes produced in their environment. Whatever the mechanisms, and probably both of those just mentioned apply, it is important to re-emphasize that radiation damage to germ cells is cumulative. This means that, for example, a gonadal dose of 10 r in a father would be added to a hypothetical dose of 20 r in his male progeny and would have to be added in turn to a possible dose of 40 r in his grandson to give an effective total irradiation of 70 r to the germ cells of the latter. At the present time the estimated gonadal dose rate is 0.095 per year. Of this, according to Holcomb, 22 per cent results from diagnostic radiology and 77 per cent comes from natural background radiation. Calculated from these data the maximum dose to the gonads over a 30-year period is less than 10 r (the permissible dose of the British and American Committees of Irradiation, and the National Bureau of Standards[5].

It has been estimated by geneticists that a total dose of 40 r is necessary to double the mutation rate. If, however, there is no minimum threshold below which genetic effects will not occur, it follows that even small exposures to radiation affecting the entire population will result in a very considerable increase in mutations. When it is realized that an exposure of 10 r could conceivably result from the injudicious use of diagnostic radiology the genetic hazards of irradiation have increased meaning.

Congenital anomalies, whether structural or metabolic, have become increasingly important as ways have been found to reduce mortality from other causes. They may result from a variety of circumstances among which are fetal hypoxia, deprivation of certain substances essential to normal growth and metabolic processes, genetic mechanisms, and, notably, damage directly to fetal tissues either from noxious materials crossing the placental barrier from the mother, or from ionizing radiation.

Although we do not know the effects of radiation before implantation of the human ovum on day 10 or 11, Rugh[6] and others have pointed out that the period from 18 to 38 days is the most radiosensitive period of fetal life. At this time the greatest number of embryonic cells are differentiating into adult types and during these transformations are extremely susceptible to injury. After about day 40, organ systems are largely established and much larger doses of irradiation are necessary to effect injury.

Much of what we know concerning the production of anomalies by irradiation of the fetus has come from comparisons with studies in experimental animals. If embryos of similar length are compared, very close parallelism exists between the embryologic development of the mouse and the human and every type of anomaly occurring in humans has been reproduced in mice after appropriate doses of irradiation[6]. Almost all such involve the central nervous system. At Hiroshima 64 per cent of unborn infants whose mothers were within 1,200 meters of the epicenter were microcephalic, not always at birth, but by 4.5 years of age. In addition to the marked and easily apparent congenital abnormalities, more subtle emotional and psychological changes may result which are almost impossible to assess because of the wide range of normal human variation.

Fractionated doses of radiation are particularly important in the production of congenital anomalies because they allow injury to occur in various body systems as these develop at different times during early fetal life. This is true in spite of the fact that some radiation damage from fractionated doses can be repaired even though damage from the same total dose given at one time is not reversible and, therefore, is quantitatively greater. As stated previously, the earlier in fetal life that radiation injury is sustained the greater will be the resultant damage.

For example, a transforming neuroblast cannot tolerate more than 40 r, whereas the adult type neuron is not destroyed by 10,000 r. The Russels believe that damage to a fetus can result from as little as 25 r[7]. Finally, even after the early fetal period of greatest radiosensitivity, random observations such as the frequent association of radiation with ocular lens injury in infants, and the sensitivity of the infant's and young child's thyroid gland to radioiodine support the generally held opinion that the young are probably more susceptible than adults.

The late effects of irradiation are less understood and objectively documented. Dunlap[8] feels that neoplasia is not necessarily a direct effect but is probably secondary to tissue changes which in turn eventually lead to the autonomous multiplication of abnormal cell forms. In reporting cases of post-radiation sarcomas of bone, Cruz et al.[9] suggest that areas of bone only slightly damaged by radiation may show abortive attempts at repair leading to neoplasia but that severely damaged areas do not have neoplastic potentialities. The dosage of irradiation necessary for their production is not definitely known. In all cases, however, there is evidence of marked injury to surrounding tissue and total doses (fractionated or otherwise) from 1,000 r to over 5,000 r are cited. Sarcomas of bone are late sequellae of irradiation and fortunately they are not common. Though rare in children, one patient of 12 years was included in the 1957 report of Cruz.

The appearance of an alarming number of x-ray burns and cancers of both skin and bone at about the turn of the century led to strongly expressed opinions such as the following quoted from The London Pall Mall Gazette which was included in a recent paper by Cade[10]: "We are sick of the roentgen ray; . . . " "But what we seriously put before the attention of the Government . . . that it will call for legislative restriction of the severest kind. Perhaps the best thing would be for all civilized nations to combine to burn all works on the roentgen rays, to execute all the discoverers and to corner all the tungstate in the world and whelm it in the middle of the ocean." This attitude appears ridiculous in the light of our present knowledge, but is an example of extremes in opinion which must be avoided in current appraisal of radiation hazards.

At present, public interest in radiation is based on a considerable knowledge of its great diagnostic and therapeutic usefulness as well as its dangers. We know that cancers of all types can be produced. Nevertheless, since Cade has shown that these postradiation sequellae may be delayed eight to 56 years, the threat is usually remote in time and hence difficult to relate to initiating radiation. Also, because the appearance of neoplastic diseases is delayed, the period of childhood has passed before many of them appear. Cancer of the thyroid and leukemia are exceptions that deserve individual discussion.

In 1957, Stewart, et al.[11] first reported on studies of children under 10 years of age who had died of leukemia or other malignant disease, comparing these with a similar group of healthy control children. The finding that abdominal irradiation (particularly pelvimetry) of the mother during pregnancy was two times as frequent in the cancer and leukemia group as in the controls was striking and was not explained by differing birth conditions, birth rank, social class or maternal age. These data stimulated Ford, Paterson and Treuting[12] of our faculty to initiate a similar study. They studied the incidence of malignant disease in children whose mothers had received abdominal irradiation during pregnancy, and, approaching the problem from this viewpoint, obtained results entirely comparable to those of Stewart. The number of cases (152) is not great and the results, though very suggestive, still do not finally prove a casual relation between radiation and cancer. Similarly, Stewart's work is not conclusive and positive correlations also were found for these conditions and maternal viral infections, threatened abortion and mongolism. The occurrence of leukemia 12 times more frequently than would have been otherwise expected following atomic irradiation at Hiroshima where dosage was relatively great, is unquestionable. Similarly an eight-fold increase in incidence among radiologists and a greater than usual occurrence after x-ray therapy for spondylitis in adults[10] support a definite relation to irradiation. Further evidence of a cause and effect relationship is furnished by extensive studies of radiation-induced mouse leukemia. Kaplan[13] has reported that leukemia which usually is produced in certain strains of mice by total body irradiation, can be prevented by shielding one leg of the animal or of giving an unshielded animal a homologous bone marrow

transfusion. It is, therefore, believed that in the normal marrow of this experimental animal there is a leukemia inhibiting factor.

Simpson and Hempelman[14], Dameshek[15], Polhemus, et al[16] and others have cited the increase in leukemia among children who have received thymic irradiation. However, in the studies of Simpson, et al[14], no leukemia was encountered following "prophylactic" irradiation of a thymus when it appeared of normal size on x-ray examination. It is probably of some importance that the radiation dose sufficient to effect reduction in the size of the gland is not great, and does not destroy the tissue as evidenced by the fact that a return to pretreatment size often occurred within six ot eight weeks. In an excellent review, Furth[1] describes experiments supporting the existence of a leukemogenic factor in the thymus gland. It has been found that thymectomy inhibits the disease and that implantation of thymic tissue in a thymectomized animal restores susceptibility to leukemia. Most workers seem to agree that leukemia is not a direct result of irradiation but, as in other types of cancer, initiates a series of cellular changes that at some point begins to give rise to leukemic cells. There is even some work in mice to indicate that radiation may liberate or in some way potentiate a virus which in turn produces the leukemic changes.

One further type of cancer, namely, that involving the thyroid gland, deserves separate consideration. Clark[17], reviewing the reported incidence of thyroid cancer in children, was able to find only eight cases under 15 years of age between 1900 and 1930, but thereafter encountered an apparently progressive increase up to 50 cases reported from 1941 to 1950. Winship[18], compiling data from six studies of nodular goiter in children, arrives at an average occurrence of carcinoma of 29 per cent in these patients (extremes: 19.3 per cent and 50 per cent). Two-thirds of the 189 cases were in females and the average age at diagnosis was 9.6 years.

As Cannon[19] has indicated, irradiation for benign disorders may produce more disabling tissue changes than the condition for which the treatment is given. This is certainly the case with thymic enlargement in children and with such conditions as chronic cough, cervical adenitis, enlarged tonsils and adenoids or peribronchitis which in the past have served as indications for irradiation but which we now know are not justifications for utilizing a potentially dangerous form of therapy. Both thyroid nodules and thyroid cancer have been demonstrated to be increased in children who have received 200 r to 800 r to the area of the thymus. Furthermore, the chance of malignant disease increases with increasing dosage and with the number of times that the patient is exposed to irradiation.

There is a high rate of metastsis in thyroid cancer in children and frequently the malignant process has spread to distant parts of the body by the time a diagnosis is reached. Fortunately, these metastases may be controllable by the use of radioiodine following thyroidectomy, but even so, the estimated five-year survival rate in Winship's study was 20 per cent[18]. More evidence must be accumulated concerning this relatively infrequent form of cancer in children before a relation to irradiation can be proved, but the striking parallelism of preceding x-ray therapy and subsequent malignancy of the thyroid is most suggestive. It has been postulated by Simpson that a thyroid gland, damaged by x-ray in infancy and subsequently exposed to overstimulation by pituitary thyrotropic hormone during puberty, reacts by the formation of nodules and/or tumors. Since, in experimental animals, the thymus and the thyroid glands demonstrate a conspicuous ability to inactivate thyrotropic hormones, it can be postulated that damage to both structures may be important in the etiology of thyroid cancer.

Awareness of radiation-related neoplasia in children imposes the obligation that these tragic occurrences be minimized. A discussion of appropriate preventive measures must first focus upon the pregnant or potentially pregnant woman. It is reasonable that a menstrual history be obtained before even diagnostic irradiation of a woman in the child bearing period be undertaken. Pregnancy is notoriously difficult to diagnose in the first three to six weeks during part of which time the critical process of fetal organogenesis takes place. When pregnancy is known to be present, any x-ray procedure or use of isotopes which is not a life-saving measure should be most carefully considered and whenever possible avoided. Undoubtedly there are indications for x-ray pelvimetry of the pregnant woman, but in view of the findings of Stewart and those of Paterson, physicians must be in-

creasingly discerning in the use of this procedure. In infants and children irradiation in general must be kept at as low a level as possible unless it is used in connection with malignant disease. This does not mean, obviously, that diagnostic procedures must be interdicted, but, rather, that they be kept at an intelligent minimum. Fluoroscopy should never be used if a film will serve adequately. Usual exposure for a chest film is equivalent to only one-fourth of a second of fluoroscopy to the same area. When fluoroscopy is necessary, dark adaptation must always be accomplished and brief exposures through the smallest practical field must be utilized. Most fluoroscopic units are designed for the examination of adults, and, therefore, may cause gross overexposure if not adjusted for children whose bodies are smaller and less thick. By the same token, diagnostic radiology must be carefully regulated; we must resist the temptation of repeated surveys for bone age and frequently repeated x-ray films of the teeth. There is no longer any justification for fluoroscopy in shoe fitting and, as a matter of fact, machines for this purpose have been outlawed in most states.

The most important single measure which must always be thought of in the protection of infants and children from excessive radiation is proper shielding of all parts of the body not in the immediate target area. Because infants are small and are hard to immobilize, there is a tendency, even in taking a simple x-ray of the chest, to expose a larger part of the patient's body than necessary. This must be avoided whenever possible and particular attention must be directed toward shielding the gonads for reasons that have already been discussed.

In 1953 in the United States 125,000 x-ray units were used for 25 million examinations without, to my knowledge, any compulsory inspection for calibration, screening, et cetera. A particularly great responsibility rests with the practicing physicians who in a vast majority of instances are not adequately trained in radiology but maintain x-ray equipment in their private offices. This problem becomes particularly difficult in view of the general public's acceptance of or even preoccupation with x-ray examination. In the face of urging by parents for an x-ray, it is not easy to explain the potential hazards of radiation without, at the same time, creating unnecessary anxieties or outright misunderstandings which may interfere with acceptance of essential x-ray examinations at some future time. Widespread dissemination to the public of factual information concerning irradiation would be most helpful, and legislation requiring the registration and periodic inspection of x-ray equipment and operators is needed.

Technical refinements in both diagnostic and therapeutic x-ray machines are constantly being devised and give promise that currently used exposures can be greatly reduced in the future. Electronic image intensifiers are an important recent advance in fluoroscopy which have the added advantage of reducing the necessity of dark adaptation. Every encouragement should be given to all such technical improvements. Major emphasis should be directed toward improving the skill of our technicians so that patients will be properly positioned, adequately instructed as to their part in the procedure, and exposed to a correctly calculated amount of radiation so that a single exposure will result in films of good quality and repeat examinations will not be necessary.

Conclusion

The production of fetal anomalies by the direct action of ionizing radiation upon differentiating embryonic cells has been amply demonstrated. Similarly the genetic consequences of irradiation which are probably accumulative without relation to a minimum threshold are well documented. The production of growth arrests in growing children as well as the immediate and delayed production following medical x-radiation and particulate radiation of tumors, particularly carcinoma of the thyroid, sarcomas of bone and leukemias, has been confirmed repeatedly. We must base our future policies upon the tolerance of the most susceptible in our population, upon a full understanding of the cumulative effects of radiation and upon the generally accepted hypothesis that a linear relation exists between dosage and radiation injury. From a practical standpoint, we must exercise extreme caution in utilizing ionizing radiation in any pregnant woman. In infants and children there should be a general rule to use it most conservatively in treatment and even in diagnosis dealing with nonfatal conditions. When indicated, x-irradiation for either therapeutic or

diagnostic purposes should be used without hesitation but with careful attention to technical details and particularly on proper shielding of the patient's body outside the target area. Finally, levels of irradiation to be expected from the judicious use of properly designed and operated x-ray equipment and isotopic preparations are well within estimated permissible doses at the present time, and many of the tragic errors of the past are being or will be corrected in the light of present knowledge.

It is appropriate, in bringing this discussion to a close, to pay respect to the progressive and self-critical attitudes and practices of our radiologist colleagues. It would be well for all physicians to seek their advice and follow their precepts.

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A recent study was conducted to determine the best respiratory protective ability of items of common usage against fallout. Eight household items were selected, and the evaluation program was performed by human subjects. At least 30 tests were made on each item.

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From 1953 through 1958, spending for health services increased more rapidly for people 65 and over, and for children under 6, than for any other age group in a recent Health Information Foundation survey. While per capita spending for all age groups increased 42 per cent during the survey period, spending went up 74 per cent for those 65 and older, and 71 per cent for children under 6.

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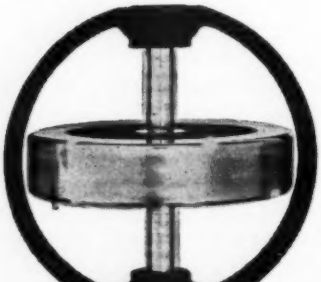

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Autoimmune Hemolytic Anemias

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(With the technical assistance of Miss Teresa Cardenas, Biological Chemist.)

HEMOLYTIC ANEMIAS

THE hemolytic anemic group comprises a series of diseases which at the present time are still not very well known, and which open questions of transcendental resolution for the practice of medicine. From this viewpoint, the sub group of the hemolytic diseases by deviation of the immunologic mechanisms is the most interesting. The autoimmune hemolytic anemias are not infrequent. They are not so frequent either that a single investigator, in a short period of time, might derive from his own work conclusive statistical data.

The present paper is a preliminary report of my experience, and some speculations regarding the problems which are encountered in this group of illnesses.

The average life span of the red cell has been estimated as 110 days. A short life span discloses hemolytic mechanisms. These hemolyses stimulate the erythropoiesis that tend to compensate the excessive destruction of erythrocytes. If the erythropoiesis is not sufficient to compensate the hemolysis, the anemic syndrome appears.

Consequently, hyperhemolysis may go along without anemia, or anemia of varying degrees. The poverty of erythrocytes reveals the defecit of erythropoiesis against the hemolysis.

From these considerations I propose the name of hemolytic diseases as more accurate than the commonly known term of hemolytic anemia.

The HE are dependent on two mechanisms fundamentally: (1) Congenitally abnormal erythrocytes, and (2) because of humoral hemolytic systems. This first classification has been obtained from the knowledge of the life span of the transfused erythrocytes. Congenitally abnormal red cells have a short life span when transfused to a normal person; on the contrary, the erythrocytes from patients with humoral hemolytic mechanisms show a normal life span when transfused to a healthy recipient.

The humoral hemolytic mechanisms may be due to a toxicity eventually present in the blood stream, or to some biological agents (parasites, bacteria, or viruses), or to abnormal immunologic mechanisms in which the body becomes intolerant to its own cells, developing antibodies that shorten the life span of the cells. This abnormal immunology leads not only to the poverty of the red cells in the blood stream, but occasionally also to the low white and platelet count.

The present paper deals exclusively with the hemolytic diseases of the autoimmune type.

The fever, headache, nausea, abdominal or lumbar pain, hematuria, jaundice, and anemia are of varying degrees, depending on the amount of the erythrocytes destroyed and the suddeness of the hemolysis. This may happen to a person with a normal spleen, enlarged or small, and even in splenectomized patients in whom a second operation discloses small accessory spleens. The anatomical findings of the spleen are not specific in character.

The diagnostic criteria in recognizing the hemolytic disease is (1) increased indirect bilirubin in serum, (2) increased free hemoglobin in serum, (3) increased output of urobilinogin from urine and fecal matter, (4) anemia of varied degrees with increased reticulocyte count, (5) in the bone marrow, signs of stimulated erythropoiesis.

This sub-classification of the HD as autoimmune is established in the demonstration of (1) pan iso agglutinins, (2) autoagglutinins or autohemolysins, (3) in this case, increased hemoglobins in the plasma, in vitro. The auto-antibodies are classified as cold or warm according to the temperature in which they are more active

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(4° C or 37-38° C.), (4) presence of protein fractions of antigenic nature that are coating red cells and rendering them agglutinable with an antihuman serum of Coombs, (5) agglutination of the erythrocyte previously sensitized with enzymes (pepsin, papain) reaction of Morton and Pickles. These AHD may appear as an accident without known antecedents in a healthy person, or as a complication of a previous disease (malignant disease, especially lymphomas, lupus erythematosis, infectious mononucleosis, etc.) In this way, two groups of patients are separated: the primary AHD and the secondary or symptomatic AHD.

The frequency of the secondary or symptomatic AHD is greater than the primary AHD. Discreet hemolysis is observed in more than 50 per cent of the patients with lymphoma. However, severe hemolytic crisis are presented in less than 20 per cent of the patients with lymphoma.

The symptomatic AHD are more frequent in the adult than in the child.

TREATMENT: Micheli (1911) has been accredited as the first to practice splenectomy as a treatment for the AHD. From 1911 to 1944, this had been the only valuable treatment for the AHD. Recently, we have been using ACTH and/or adrenal steroids. Therefore, the evaluation of treatment should be made starting from 1944. That is to say, from the time in which Coombs developed the antihuman serum to disclose the coating antibodies. This date is almost coincidental with the date in which we began to use ACTH and adrenal steroids.

In considering the summary taken from "Results of Splenectomy in Autoimmune Hemolytic Anemias" — Chartkow and Dacie(1), British Journal of Hematology, 1956, 2, 137. In it we can observe good results in 6 patients from 28 splenectomized. Good results are interpreted by no further hemolytic crisis after splenectomy within a period of observation from 8 months to 5½ years after the operation.

It has been impossible to predict the results of splenectomy. We are also unable to derive any conclusions as to the use of ACTH and/or steroids before the operation and the post-operative results.

When the role of the spleen is considered in the pathogenesis of the AHD, it's easy to understand the unpredictable results of splenectomy. It should be remembered that the spleen is only part of the reticulo-endothelial system where the antibodies are produced and according to the famous expression of Killiker (1849), the spleen is the cemetary of the erythrocytes. That is to say, the cellular destruction is "conditioned" outside of the spleen. Therefore, splenectomy should be considered only in patients with a minimum of surgical risk, and with sudden and severe hemolytic crisis. If the patient is not markedly improved, or cured with splenectomy, we should consider the use of ACTH and/or adrenal steroids.

The medication by itself is useful in 55% of the patients (Dameshek — The Autoimmune Hemolytic Anemia of Malign Lymphocytic Disease — Blood, March 1955). These statistics have been verified by many investigators as Jean Dausset — (Immuno Hematoglie, Biologique et Clinique, p. 271).

The therapy with prednisolone (which is often the choice drug) will be kept during the hemolytic episode at a dose varying from 40 to 70 mgs. daily. According to statistics of Osgood, the average survival after the crisis is from 1 to 2 years.

(Incidence and Treatment of Acquired Hemolytic Anemia Complicating Chronic Lymphocytic Leukemia; Sixth International Congress, International Society of Hematology, Boston, Sept. 1956)

To summarize our experience of the last four years with patients with AHD. Six patients, all of them adults, with ages varying between 38 and 56 years — four men and two women. Only one primary AHD of a chronic course, five symptomatic secondary AHD to a lymphoma, and of the acute course. The survival of the patients from the moment of the first hemolytic crisis has been of less than two weeks in two patients who died during the hemolytic crisis. One patient died 4 months later from a pulmonary complication. In one patient, we were unable to obtain information being that she left the hospital. Two of the patients are still alive and free from hemolytic crisis. Neither has been splenectomized. All have kept under treatment with Prednisolone.

COMMENTS: The prime character of the hemolytic diseases of the autoimmune type is an intolerance of the body against his own cells. This could be interpreted as a change in the prevalent conditions of the intra-uterine life, or perhaps (and this seems to be the more

probable), because the erythrocytes in a given moment change the antigenic structure in such a way that from this moment, they stimulate the production of auto-antibodies.

The antihuman serum of Coombs permits the recognition of a protein factor lately identified as a gamma globulin that coats the erythrocytes, and that is responsible for its agglutination.

Some exceptions have been reported of healthy people who give a positive Coombs reaction. However, these very infrequent cases which are difficult to explain, do not invalidate the practical use of the Coombs reaction.

Even after demonstration of the antigens coating the red cells, the hemolytic mechanism is not easy to explain. Undoubtedly, the mechanism of antibody production may be altered by multiple factors. The "prevalent conditions" during the uterine life that bring to existence the immunological conflicts within the same individual, have been altered. This alteration may be due without question to bacteria and viruses, and probably the neoplastic cells are also able to produce similar reactions. Bacteria, viruses, chemicals from exogenous origin, or protein factor derived from abnormal metabolisms of neoplastic cells may act as haptens, coating the red cells and stimulating antibody production. Or perhaps these factors, when coating the red cells, might harm them, rendering them more suceptible to hemolysis. Until now, it hasn't been possible to give an experimental explanation for this problem.

Research is intense — it continues indefatigably. The answer that discloses the truth in all its marvelous simplicity must soon be found.

"Anemias Hemoliticas Autoimmunes"

Jose Miguel Rizo Urzua, D.M.

Guadalajara, Jal., Mexico

Nov. 1958

(Con la colaboracion tecnica de la Srta. Teresa Cardenas Q. B.)

EL GROUPO de las anemias hemolíticas comprende una serie de padecimientos a la fecha imperfectamente conocidos que plantéa cuestiones de resolución transcendente para el ejercicio de la Medicina. Desde este punto de vista, el sub-grupo de las enfermedades hemolíticas por aberracion de los mechanismos inmunológicos o "autoinmunes," es el más interesante.

Las enfermedades hemolíticas autoinmunes, no son raras. Tampoco son tan frecuentes como para que un solo investigador, en un plazo corto, pueda derivar de su propio trabajo, datos estadísticos concluyentes.

El presente trabajo es un informe preliminar de mi experiencia y algunas consideraciones acerca de los problemas planteados por estos padecimientos.

El promedio de vida de los eritrocitos ha sido estimado en 120 días. Unpromedio de vida reducido, revels mecanismos de hiper-hemólisis. Esta hiper-hemólisis estimula mecanismos de eritropoiesis que tienden a compensar la excesiva destrucción eritrocítica. Si la eritropoiesis es insuficiente para reponer los eritrocitos hemolizados, se aprecia el síndrome anémico.

En consecuencia, los mecanismos de hiperhemólisis pueden cursar sin anemia apreciable o con anemia de intensidad variable. La anemia expresa la desproporción entre la eritropoiesis y la eritrocateresis.

Si el rasgo común en este grupo de padecimientos es la hiperhemólisis y no la anemia, la denominación más adecuada es la de ENFERMEDAD HEMOLITICA y no la de anemia hemolítica, generalmente empleada.

Las enfermedades hemolíticas (EH) obedecen a dos mecanismos fundamentales dependientes de 1) defectos constitucionales de los eritrocitos o factores corpusculares y 2) las ocasionadas por sistemas hemolíticos extracorpusculares o humorales. Ssta primera clasificación se ha derivado del conocimiento de la sobre-vida de los eritrocitos transfundidos. Los eritrocitos constitcuionalmente defectuosos y anormalmente frágiles tienen una sobrevida corta si son transfundidos a una persona sana; por el contrario,

los eritrocitos de los enfermos con padecimientos hemolíticos humorales, tienen una sobrevida normal, si son transfundidos a personas sans.

Los mecanismos de hiperhemílisis extracorpusculares pueden obedecer a la acción de tíxicos eventualmente presentes en el torrente circulatorio o a la acción de agentes biológicos (parásitos, bacterias o virus), o bien, a mecanismos inmunológicos anormales en los cuales el organismo se vuelve intolerante para sus propias células frente a las cuales reacciona produciendo anticuerpos que acortan notablemente su promedio de vida. Estos anormales mecanismos de inmunidad conducen no únicamente a la pobreza de eritrocitos en la sangre periférica, sino, tabién, frecuentemente a la leucopenias y trombocitopenias "autoinmunes."

LA PRESENTE EXPOSICION SE LIMITA A LAS ENFERMEDADS HEMOLITICAS DE CARACTER INMUNOLOGICO O "AUTOINMUNES."

La fiebre, cefálea, nausea, dolor epigástrico o lumbar, hematuria, ictericia y anemia, son de grado variable, dependiendo de la magnitud y brusquedad de la hemólisis. La hemólisis puede apreciarse en enfermos con bazo de tamaño normal, grande o pequeño y aun en enfermos esplenectomizados en los cuales una segunda intervención permite descubrir pequeños bazos supernumerarios.

La imágen histológica del bazo NO tiene caracteres específicos. El criterio de diagnóstico que permite reconocer enfermedades hemolíticas, fundamentalmente es: el apreciar 1) aumento de la eliminación en 24 horas del urobilinógeno fecal y urinario 4) anemia de grados variables con aumento de la cifra de reticulocitos 5) en la médula hematopoiética, signos de estímulo eritropoiético.

La subclasificación del padecimiento como "autoinmune" se establece al demostar: 1) pan iso-aglutininas 2) autoaglutininas o auto hemolisinas 3) estas últimas, por aumento de la hemoglobina libre en plasma. Se subclasifican los autoanticuerpos como fríos o calientes de acuerdo con la temperatura a la cual desarrollan su mayor actividad (4°C o 37-38°C) 4) presencia de fracciones proteicas antigénicas que recubren a los eritrocitos, volviéndolos aglutinables mediante el suero antihumano de Coombs. 5) aglutinación de los eritrocitos previamente tratados con enzimas (pepsina, papaina); reacción de Morton y Packles.

Estas EHA puenden presentarse como un accidente sin causa aparente, en una persona sana o bien, como una complicación de un padecimiento neoplásico maligno (especialmente linfomas), lupus eritematosos, mononucleosis infecciosa, etc. Desde este punto de vista, quedan distinguidos dos groupos de enfermos, los que no tienen algñn antecedente que explique la EHA (primarias) y los que padecen la EHA como complicación de otro (EHA secundarias o sintomáticas).

La incidencia de las EHA secundarias es mucho mayor que las primarias. Discretas manifestaciones de hemólisis se aprecian en más de un 60% de los enfermos con linfoma. Sin embargo, crísis hemolíticas severas se presentan en menos del 20% de los enfermos con linfoma sin que a este respecto yo haya encontrado estadísticas precisas.

Las EHA secundarias en los linfomas son de una incidencia mucho mayor en el adulto que en el niño, como puede apreciar en esta gráfica obtenida de: Autoinmune hemolytica anemia, Crosby and Rappaport Blood Jan. 1957).

TRATAMIENTO:

Micheli (1911) ha sido acreditado como el primero en practicar la esplenectomía como tratamiento para la EHA. Desde esta fecha había sido el único recurso terapéutico de utilidad hasta fecha reciente en que se emplean el ACTH y/o los esteroides suprarrenales. En realidad, la evaluación del tratamiento debe hacerse a partir de 1944 a la fecha, es decir, desde que el diagnóstico de los anticuerpos bloqueadores ha sido posible gracias al suero antihumano de Coombs. Casi coincide esta fecha con el empleo de los esteroides suprarrenales y el ACTH.

Yo no he podido encontrar series sufientemente grandes en las cuales poder evaluar el estado actual del problema esplenectomía vs. tratamiento hormonal. Por la seriedad del autor, esta es una de las series más de tomarse en cuenta. (Results of splenectomy in autoinmune hemolytic anemias. — Chertkow and Dacie.

Brit. J. of Hemat. — 1956, 2, 237). En ella se puede apreciar buen resultado de la esplenectomía en 6 casos de un total de 28 enfermos sometidos a la intervención; buen resultado expresa NO repetición de las crísis hemoliticas y en estas series, esta observación ha comprendido lapsos que van de 8 meses a 51/2 años. No ha sido posible encontar algún procedimiento

para poder anticipar los resultados de la esplenectomía. Tampoco hay alguna correlación entre los resultados obtenidos con el empledo de la ACTH y/o corticoides antes de la intervención y los resultados post-esplenectomía.

Cuando se considera el papel del bazo en la producción de la EHA se pueden comprender los resultados inciertos de la esplenectomía. Recuérdese que el bazo es únicamente un eslabón de la cadena retículo-endotelial, productora de anticuepos y según la célebre expesión de Kolliker (1849), el bazo es el cementerio de los eritrocitos; es decir, es decir, la destrucción celular ha sido "condicionada" fuera del bazo. Por estas consideraciones, me parece que es de discutirse la utilidad de la esplenectomía en los casos en los cuales el riesgo quirúrgico sea mínimo y la crísis hemolítica muy severa. Si en estas condiciones la esplenectomía no conduce a la mejoría que con ella se busca, el enfermo será tratado con ACTH y/o corticosteroides. Este tratamiento médico es útil en el 55% de los enfermos. (Dameshek. The auto immune hemolytic anemia of malignan lymphocytic disease Blood March 1955), dato que ha sido corrobarado según se aprecia en el cuadro tomado de Jean Dausset — (Inmmuno hematologie, biologique et clinique, p. 271)

La terapéutica con prednisolona (que se muchas veces el agente de elección), se mantedrá durante la duración de la crísis hemolítica, a una dósis que varía de 40 a 70 mg. diario.

De acuerdo con las estadísticas de Osgood, el promedio de sobrevida después de la aparación de la crísis de EHA secundaria a un linfoma, es de 1 a 2 años. (Indidence and treatment of acquired hemolytic anemia complicating chronic lymphocytic leuqemia; Sixth International Congress, International Society of Hematology, Boston, Sept. 1956.)

El siguiente cuadro sumariza mi experiencia de los últimos cuatro añns con enfermos de EHA. Seís enfermos de los cuales todos son adultos, con edades comprendidas entre los 38 y 56 años, 4 hombres y dos mujeres. Solamente una EHA primaria y de curso crónico; 5 secundarias a linfomas y de curso agudo. La sobrevida de los enfermos a partir de la aparición de la EHA ha sido de dos semanas en dos enfermos que fallecieron durante la crísis hemolítica, un enfermo falleció cuatro meses después de una complicación pulmonar, en un enfermo no fué posible obtener información y dos enfermos han tenido una sobrevida de más de un año, estando a la fecha libres de la crísis hemolítica.

DISCUSION:

El carácter fundamental de los padecimientos hemolíticos autoinmunes radica en que el enfermo se muestra intolerante frente a sus propios eritrocitos. Esto pudiera interpretarse como un cambio de las "condiciones" prevalentes durante el desarrollo intrauterino o bien, — y esto parece ser lo más probable—, debido a que los eritrocitos en un momento dado han modificado su estructura antigénica, de tal modo que desde ese momento despiertan la formación de autohemolisinas.

El suero antihumano de Coombs permite reconocer la presencia de un factor protéico, posteriormente caracterizado como gamaglobulina y que recubre los eritrocitos, permitiendo así su aglutinación.

Se ha informado de algunas rarísimas excepiones de personas sin padecimientos hemolíticos que dan una reacción de Coombs positiva, sin embargo, estas extraordinarias excepciones, si bien muy difíciles de interpretar, no le restan valor préctico a la reacción de Coombs.

Aún demostrando la presencia de antígenos en la superficie de los eritrocitos, el mecanismo de la hemólisis no es de explicación fácil. Indudablemente, el mecanismo de producción de anticuerpos puede ser alterado por múltiples factores. Las "condiciones prevalentes" durante la uterina que hacen inexistentes conflictos inmunológicos dentro del mismo individuo, han sido alteradas. Esta alteración puede ser provacada por bacterias y virus, fuera de duda, como se ha apreciado tantas veces, sobre todo en los enfermos convalescientes de neumonias a virus y muy probablemente las células neoplásicas sean también capaces de producir alteraciones semejantes. Bacterias, virus, productos químicos exógenos o proteínas derivadas de metabolismos desviados de las células malignas, pueden actuar como haptenos, recubriendo los eritrocitos y despertando respuestas antigénicas de autohemolisinas. O tal vez, estos factores, al absorberse por la superficie de los eritrocitos, los lesiones, haciéndolos más fácilmente hemolizables. Hasta la fecha no ha sido posible ofrecer la demostración experimental que aclare el problema.

La investigación es intensa, cont:nua, infatigable. La respuesta que revela la verdad en toda su maravillosa sencillez, no ha de tardar.

Hypogonadal Impotence In Middle-aged Men

Treatment with Fortified Chorionic Gonadotropin*

Elegy A. Etter, M.D.

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IN MY typical office practice, the most common complaints encountered in men past forty have been sexual impotence and symptoms of the male climacteric. The latter include loss of self-confidence, nervousness, anxiety, worry, depression, hot flashes, insomnia, and emotional outbursts. Many of these patients resort to tranquilizers or barbiturates in a vain attempt to secure temporary relief.

The symptoms of the male climacteric are, of course, similar to those of the psychoneuroses resulting from emotional stress in persons of all ages. However, they are more directly associated with the aging process and aggravated during the male climacteric.

There is another important difference: In younger psychoneurotics, the symptoms may disappear so as to leave a long interval of normal behavior. In the male climacteric, on the contrary, the nervous symptoms grow more and more severe, so as to establish a vicious circle.

The object of therapy is to provide simultaneous relief of the impotence and climacteric symptoms. In my rather extensive experience in this field, best results have been obtained on a course of treatment with fortified chorionic gonadotropin*.

The composition of Glukor fortified chorionic gonadotropin per each cc. is chorionic gonadotropin 200 i.u., thimaine hydrochloride 25 mg., L (+) glutamic acid 52.5 ppm., chlorobutanol 0.5% and procaine hydrochloride 1%. It is administered intramuscularly in a dosage of 1 cc. twice weekly for a period of about four weeks, after which injections are given once a week for maintenance. Eventually one injection per month will suffice.

*The product used in this clinical investigation was Glukor multiple dose vials, supplied by Research Supplies, of Albany, N. Y.

CLASSIFICIATION OF IMPOTENCE

Symptomologically, impotence may be classified into four forms:

(1) *Impotentia erigendi*, or inability to have an erection of the penis, although libido is present. Absence or deficiency or erection is the most common type of impotence(1). In many cases erections still occur but are too flabby to permit intromission of the penis into the vagina or fade away during unsuccessful attempts at intercourse.

(2) *Impotentia coeundi*, or inability to complete the act of ejaculation satisfactorily. This should be distinguished from permature ejaculation, a condition which actually is due in many cases to the wife's frigidity, in that she reaches her climax only after a prolonged period of sexual stimulation or in some cases not at all(2).

(3) *Impotentia generandi*, or inability to reproduce in spite of normal intercourse. This fault is due to defective spermatogenesis or a specific incompatibility between the seminal fluid and the vaginal secretion.

(4) *Absence of libido*. This condition may result normally from preoccupation with intellectual work, in which case it is temporary; it may be deep-rooted in Freudian psychology,

such as a manifestation of homosexuality or narcissism; or it may be a definite manifestation of hypogonadism, either primary in younger subjects or associated with the male climacteric in older patients.

Etiologically, there are three grand divisions of impotence:

(1) *Psychogenic impotence,* resulting from inhibitory influences upon the cerebral cortex. The most common psychological causes include ideas of guilt or remorse, a sense of shame or disgust, Oedipus complex, puritanical upbringing, fear of causing pregnancy or of being discovered in the act, or a repressed juvenile libidinous fixation upon another type of woman. Psychological impotence is most common in younger men, as in the early days of married life.

(2) *Hypogonadal impotence,* resulting from a deficient secretion of androgen by the Leydig's cells in the interstitial tissues of the testicles. This form is most common in middle-aged and elderly men and is often associated with the male climacteric.

(3) *Mixed hypogonadal and psychogenic impotence.* In this type the gradual but partial loss of sexual power due to hypogonadism results in a deep sense of inferiority. A psychoneurotic overlay may produce complete impotence, until appropriate therapy enables the patient to have satisfactory intercourse and thereby restores his self-confidence.

RATIONALE OF GONADAL STIMULATION

Two types of endocrine therapy are generally recognized in the treatment of hypogonadal impotence:

(1) *Replacement therapy* with testosterone or one of its derivatives, such as the propionate, cyclopentylpropionate, enanthate, or methyltestosterone.

(2) *Gonadal stimulation* with chorionic gonadotropin.

Replacement therapy with testosterone is beneficial only as long as it is continued(3). In fact, testosterone may be detrimental and induce temporary sterility by inhibiting the normal secretion of pituitary gonadotropins(4). Finally, psychogenic or neurogenic impotence is seldom benefited by testosterone treatment(5).

My own experience, as reported in this paper, indicates that more effective and lasting results in the treatment of hypogonadal impotence are obtained with fortified chorionic gonadotropin than with any of the various forms of testosterone.

Chorionic gonadotropin is the water-soluble gonadotropic substance obtained from the urine of pregnant women by selective precipitation and fractionation procedures(6). It is of human placental origin.

It has been proved definitely that chorionic gonadotropin acts on the interstitial cells of the testicles (Leydig's cells), which furnish the male sexual internal secretion. It causes these cells to elaborate the androgenic hormone, which in turn induces growth of the accessory sex organs(7). Chorionic gonadotropin is effective in male monkeys and human beings.

By providing potent stimulation of the interstitial endocrine cells of the testicles, chorionic gonadotropin is valuable in the treatment of sexual infantilism with defective sperm formation(8).

Chorionic gonadotropin acts directly on the gonads without the intermediation of the pituitary gland(9). Its effects are similar to those of pituitary ICSH (interstitial cell stimulating hormone), since both stimulate the interstitial cells of the testicles to secrete the androgenic hormone(10).

In hypogonadotropic eunuchoidism, chorionic gonadotropin is the preparation of choice to stimulate interstitial cell activity(11).

In middle-aged men hypogonadal impotence is usually associated with symptoms of the male climacteric. This syndrome(12) is characterized by nocturia, fatigability, moodiness, irritability, impaired mental concentration, indecision, hot flashes, decreased libido, and a fear of impending impotence. Other symptoms include dizzy spells, headaches, excessive perspiration, numbness, tingling, tachycardia, weakness, and a feeling of inadequacy in undertaking new assignments.

It has been my experience that many patients come to the office complaining of the male climacteric symptoms and that the direct evidence of declining virility is elicited only by pointed interrogation.

To provide relief of the climacteric symptoms concurrently with correction of the hypogonadism, two fortifying agents have been added to chorionic gonadotropin; namely, glutamic acid

and thiamine hydrochloride in therapeutic proportions.

Glutamic acid improves mental and physical alertness and the L-form appears to be the sole therapeutic agent(13). Evidence of its mental stimulation is provided by the fact that L-glutamic acid restores consciousness to schizophrenic patients in hypoglycemic coma following insulin injections(14).

In addition to its specificity for beriberi, thiamine hydrochloride corrects other prominent deficiency symptoms manifested by the nervous system. The latter include irritability, various psychic or emotional disturbances, abnormal fatigability, and neurasthenic symptoms(15). It will be noted that these complaints are often observed in the male climacteric.

On a practical as well as a theoretical basis, I have found that fortified chorionic gonadotropin injections provide superior and lasting benefit in the treatment of hypogonadal impotence associated with the distressing symptoms of the male climacteric.

CLINICAL TRIAL

Injections of fortified chorionic gonadotropin were employed as the only medication in a series of 82 cases of hypogonadal impotence. Results were compared with negative findings following use of a placebo by the standard double blind technique.

The ages ranged from 37 to 74 years, with the majority around 45 to 50. Most of the patients were under treatment for disturbances of sexual potency, undue emotional tension and fatigue, the male climacteric, and senile manifestations.

Previous treatment with other medications including testosterone had produced only fair or negative results. Testosterone had been given to 72% of the patients over a period of thirty months with little or no benefit.

After a series of intramuscular injections of 1 cc. fortified chorionic gonadotropin, twice a week, all of the patients showed improvement. Sexual potency returned in most cases, general tensions eased off, and depression and fatigability decreased. The patients became less irritable, slept better, and had more energy and self-confidence.

Improvement was noted within three weeks in 72% of the cases; within four weeks, in 81%.

After four weeks a control experiment was instituted. The treatment was continued in 41 cases and discontinued in the other 41.

The patients who continued treatment maintained their improvement throughout the full course of therapy.

Of the 41 control patients whose injections were terminated, 32 (78%) returned after two to three weeks complaining of their original symptoms. The other 9 (22%) reported similar loss of vigor and return of nervous symptoms at the end of four weeks. Injections of fortified chorionic gonadotropin were resumed in these cases, with the result that potency was again restored and the symptoms were relieved.

CASE HISTORIES

The following three case histories are representative of the results obtained in this group of patients.

Case No. 1. A. B., male, age 69, complained of impotence, insomnia, dyspnea, gastric pain and hypertension. His blood pressure was 185 mm. Hg. systolic, 120 diastolic, pulse 108. He was able to sleep only three hours a night. Physical examination disclosed a facial paralysis of the peripheral nerve type.

Treatment with testosterone, tranquilizers and other medications gave no benefit.

After two months of treatment with fortified chorionic gonadotropic injections, 1 cc. twice weekly, the patient showed remarkable improvement. Impotence was relieved, he slept soundly, felt no pain, and was less tense than he had been in years. His blood pressure was reduced to 158/98, pulse 88.

The treatment was continued in courses with intervals for a period of three years. At the age of 72 the patient is physically and sexually active and his anxieties about himself and his condition have disappeared. He looks and feels like a man much younger than his years.

Case No. 2. L. B., a minister, age 74, was in excellent physical condition except for sexual impotence, chronic prostatitis and hypertension. His systolic blood pressure was 196 mm. Hg., diastolic 110, pulse 98.

After a course of treatment with fortified chorionic gonadotropin, his impotence was relieved, he walked erect and drove a car, blood

pressure was reduced to 156/94, and the pulse rate dropped to 80. Treatment was maintained with two or more injections per month.

The symptoms returned whenever the patient stayed away for a prolonged period of time, but he always responded promptly to readministration of fortified chorionic gonadotropin.

Case No. 3. J. K., male, age 45, a salesman, three children, complained of a very disturbing and depressing sexual impotency. Associated symptoms were primarily emotional tension, fatigue, listlessness, paroxysmal bouts of dizziness and faintness, and persistent insomnia.

On physical examination he was found to have a low blood pressure of 104 mm. Hg. systolic, 62 diastolic, pulse 78. Blood counts, urinalysis, chest x-ray and EKG were all negative. Examination of the semen revealed oligospermia.

Previous therapy included testosterone, thyroid, strychnine preparations and amphetamines, all of which produced only slight symptomatic relief.

Fortified chorionic gonadotropin 1 cc. was injected intramuscularly twice weekly for three weeks. At the end of that time the patient stated that he had made a remarkable recovery. Impotency was completely relieved, vigor and stamina had returned, blood pressure was raised to 118/78, sleep was normal, dizziness had disappeared, and the spermatozoon count showed normal findings. After four weeks of biweekly injections, he was maintained on one injection per week with the same good results.

SUMMARY AND CONCLUSIONS

1. Impotence may be classified etiologically into the psychogenic, hypogonadal and mixed categories.

2. Symptomologically, impotence may be classified as impotentia erigendi, impotentia coeundi, impotentia generandi, and loss of libido.

3. Replacement therapy with testosterone and its derivatives has given only fair or negative results.

4. Gonadal stimulation with fortified chorionic gonadotropin provides the most satisfactory treatment for hypogonadal impotence.

5. A clinical trial with injections of fortified chorionic gonadotropin 1 cc. twice weekly provided superior and lasting benefits.

6. Fortified chorionic gonadotropin therapy not only restored sexual capacity but also relieved the male climacteric.

7. The therapeutic benefits persisted as long as the therapy was continued, disappeared several weeks after the injections were discontinued, and returned with resumption of treatment.

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CLOSED TREATMENT OF HERNIATED-INTERVERTEBRAL LUMBAR DISCS by Darius Flinchum, M.D.

Flexion rest, symptomatic analgesics, muscle relaxants, traction, manipulation under general anesthesia, plaster flexion corset for 6 weeks, and flexion exercise and stress have given relief to many suffering from back and leg pain due to herniated intervertebral lumbar discs. No improvement may be anticipated with this conservative method, if the disc is completely ruptured out free in the spinal canal or if it is an old settled disc. (Condensed from *Journal Medical Association Georgia*, 48:461, 1959)

Diagnosis and Treatment of Diseases of the Parathyroid Glands

PART II

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PARATHYROID HORMONE

THIS hormone is probably a protein according to current evidence. Two components to the hormone have been found, one with a molecular weight of 15,000 to 25,000, the other with a molecular weight of 500,000 to 1,000,000. It is fairly stable in slightly acid media, but is best preserved as a dry powder(160). Thus far, it has not been isolated in pure form.

Parathormone is measured in units. One unit is equal to 1/100 of the amount necessary to raise the serum calcium of 100 cc. of serum of normal dogs weighing 20 kilograms, by 5 milligrams within 15 hours after subcutaneous injection. While parathormone injections may be of therapeutic aid for short periods, tolerance develops with continued use so that its long term value is limited(98).

A major function of the parathyroid hormone is to cause a decrease in the renal reabsorption of phosphorus(35, 81). In addition, it increases the urinary excretion of both calcium and phosphorus. Although parathormone is thought to inhibit the renal tubular reabsorption of phosphate, its exact physiologic action is still obscure(73, 125). It also exerts an action on bone, presumably by stimulating proliferation of osteoclasts of the bone barrow with an ensuing increased erosion of bone trabecules, with resultant decalcification(159). It would appear then that there are two or more types of parathyroid hormones according to available evidence. The two primary hormones are considered to be the calcium mobilizing substance which causes bone changes, hypercalcemia, increased urinary excretion of calcium, and also the phosphaturic substance which is capable of decreasing renal tubular reabsorption of phosphate, increasing urinary excretion, and lowering the serum phosphorus(77, 124). Studies by Munson would indicate that the two mechanisms of action of parathormone are independent of each other(124). The foregoing was further brought out by the administration of parathyroid extract (Lilly) to normal subjects with a definite rise in serum calcium but without a phosphate diuresis. This observation is of double importance since it shows that the hypercalcemia induced by parathyroid extract need not be mediated by phosphate diuresis(45). It has been well shown, too, that certain parathyroid hormone extracts may be inactive with regard to effect on serum calcium yet have an effective phosphate diuresis effect(100, 165).

The mechanism of action by which parathormone induced phosphaturia is produced is still not clear(159). While a decrease in tubular reabsorption of phosphate is thought to be responsible, other studies have shown that phosphaturia in a given instance may be due to increased glomerular filtration of phosphate. Hiatt and Thompson have shown that the intravenous administration of parathyroid extract results in a phosphate diuresis. This effect, in normal per-

sons, can be accounted for by a rise in filtered phosphate secondary to a rise in glomerular filtration rate. In hypoparathyroid patients there is a decreased tubular reabsorption of phosphate as well as an increase in glomerular filtration of phosphate(90). Thus, more must be involved than the renal tubular mechanism.

The interrelationship of parathormone and other endocrine glands is of interest. The influence of the pituitary upon the parathyroid glands remains undecided. Albright and Reifenstein state there is no evidence of hypoparathyroidism in hypopituitarism which would suggest that parathormone output is not under pituitary control. Other data are available which suggest that there might be an indirect relationship between the two glands(42, 93, 148, 157).

Adrenal cortical hormones will lower the level of serum calcium, presumably by increasing calcium loss in the stool(131, 161). In this regard, there is conflicting experimental and clinical evidence. Experimental adrenalectomy will relieve the tetany of hypoparathyroidism(169). The foregoing would suggest that adrenocortical insufficiency would improve hypoparathyroidism; however, this has not been shown clinically. On the other hand, the administration of cortisone may make previously well controlled hypoparathyroidism unmanageable with regard to hypocalcemic tetany with return to a normal state following cessation of cortisone administration(123, 131). In support of the experimental data is a case of idiopathic hypoparathyroidism which was improved with the onset of adrenal insufficiency(107).

PARATHYROID PATHOLOGY

There are scattered reports in the literature of very little, if any, change in cytology of the parathyroid glands in the presence of clinically obvious hyperfunction of the gland(174).

From the foregoing paragraph, it is clear that the associated clinical picture is of extreme importance in the histologic diagnosis of parathyroid disease. However, one should be able to make a clear-cut microscopic diagnosis in the majority of cases.

The terminology of parathyroid histology and cytology is extremely confusing because there is no unanimity of opinion with regard to the nomenclature and number of cell types(98). Castleman and Mallory in 1935 felt that "the nomenclature of the types of parathyroid cells was regrettably confused" and attempted to establish a descriptive base line by a thorough description of the normal gland(43). In spite of their monumental paper, a veil of mystery is still apparent when one tries to decode the current material on this subject.

Castleman and Mallory originally described four types of cells and realized, even then, that there were probably numerous transitional forms.

The chief cell (principal cell) is polyhedral in shape, poorly outlined, and measures 6 to 8 microns in diameter. Its nucleus is large, round, sharply demarcated by a basophilic outline, comprises more than half of the cell volume, and measures 4 to 5 microns in diameter. The chromatin is usually abundant and may give the nucleus a pyknotic appearance. The cytoplasm is usually quite scant and faintly acidophilic. The cytoplasm may be retracted toward the cell margins, leaving an unstained halo of varying width about the nucleus, and this is often spoken of as vacuolization.

When the cytoplasm is apparently entirely absent (complete vaculization) the cell is called a "water-clear" or "wasserhelle" cell. At this stage the cell is sharply outlined and is larger than the chief cell, measuring 10 to 15 microns in diameter. Its nucleus is about the same size as that of the chief cell, but is usually more hyperchromatic, more often pyknotic, and eccentrically located. These cells are seen only occasionally in the apparently normal gland and then only in small groups.

The oxyphil cell, as originally described by Castleman and Mallory, may be subdivided into a pale and a dark form.

The pale oxyphil cell is polyhedral in shape, has a well demarcated cell margin and measures 11 to 14 microns in diameter. The nucleus is about the same size as that of the chief cell but is not as hyperchromatic. The cytoplasm is reddish pink, finely granular, and completely fills the cell. There is no vacuolization.

The dark oxyphil cell is larger than the chief cell but smaller than the pale oxyphil and measures 8 to 10 microns in diameter. Its cell border is not sharp. The nucleus is small, 3 to 4 microns, and intensely pyknotic. The cytoplasm is dark red and homogeneous.

The distribution of parathyroid cells varies with the age of the individual. Up to the time of puberty the glands are composed almost completely of chief cells. After puberty large fat cells appear in the stroma and increase in

number until about 40 years of age. The fat tissue remains fairly constant during middle age and does not increase with old age.

At time of puberty or shortly thereafter pale oxyphils gradually appear and they increase in number with increasing age. After 40 to 50 years of age they form large islands. Dark oxyphil cells, too, occur after puberty.

The wasserhelle cell does not occur before puberty. In cases of hyperplasia secondary to renal disease, the whole gland may be composed of these cells.

In 1952 Castleman wrote that the chief cell was the only cell type and that the other cell types represent variations in the life cycle of the chief cell. He considers the oxyphil cell an involuted non-functioning variant of the chief cell, and the wasserhelle cell a chief cell with a hypervacuolated cytoplasm on the basis of hyperfunction(98, 41).

Three pathologic entities have been found in the parathyroid glands of patients with primary hyperparathyroidism(181): (1) single or multiple adenomas, (2) hypertrophy and hyperplasia of all the parathyroid tissue, and (3) carcinoma of one of the four glands.

SINGLE OR MULTIPLE ADENOMAS

Single or multiple adenomas are the cause of about 90% of cases of primary hyperparathyroidism(181). They are usually a darker brown than the normal parathyroid due to an absence of stromal fat which gives a yellowish color to the gland. If an edge of normal parathyroid tissue is seen on section of an adenoma, the possibility of hyperplasia is excluded since hyperplasia doesn't involve one part of a gland and leave the remainder normal(184). The parathyroid adenoma may exhibit a single cell type; however, a mixture of cell types is not infrequent. The most common type of adenoma is composed of either chief or transitional wasserhelle cells while adenomas of non-transitional wasserhelle cells are somewhat rare(44, 98, 184). The oxyphilic type of parathyroid adenoma is also rare and is probably the least common variety(127). Some adenomas may exhibit marked cytologic irregularities with many giant cells(43, 184). Occasionally the glandular type of parathyroid adenoma may bear some resemblance to a fetal adenoma of the thyroid. Hurthle cell adenomas of the thyroid may be confused with the oxyphilic type of parathyroid adenoma if the parathyroid has an intrathyroid location(184).

PRIMARY HYPERTROPHY AND HYPERPLASIA

Generalized hyperplasia differs sharply from secondary hyperplasia of the parathyroids due to chronic renal disease in that it is a "primary disease" as is an adenoma(11). The first recognition of this disorder occurred in 1934(6). In this condition, the only cell found is the wasserhelle cell with basally oriented nuclei arranged in an alveolar or acinar pattern. The cells resemble normal wasserhelle cells; however, they are much larger, varying in size from 10 to 40 microns. Grossly all four parathyroids are involved and the glands are 30 to 100 times the size of normal glands(181).

SECONDARY HYPERPLASIA

Secondary hyperplasia of the parathyroids occurs as a result of long standing renal insufficiency. The glands tend to be smaller in secondary hyperplasia and the cells are also smaller(181, 184). Rarely, the glands in secondary hyperplasia will be larger than those expected in the primary form of hyperplasia(98). The microscopic features of major importance is the chief cell as opposed to the large wasserhelle cell of primary hyperplasia. There is usually a mixture of cell types, and oxyphils are usually present in larger numbers than in the normal gland. Small wasserhelle cells may occur uncommonly in cases of secondary hyperplasia and these transitional types of wasserhelle cells are present in small numbers(184).

PARATHYROID CARCINOMA

This subject is discussed in another section of this paper under the general heading of parathyroid carcinoma.

THE SURGICAL APPROACH TO HYPERPARATHYROIDISM

Once the diagnosis of this disorder is made on sound clinical grounds, the only rational therapy is surgical removal of the hyperfunctioning parathyroid tissue(15, 16, 24, 32, 154). Other methods of therapy have been attempted but they have been discarded(84, 119). It is rare to be able to localize the site of a parathyroid adenoma before operation, thus, the surgeon must depend upon a meticulous exploration. The majority of parathyroid tumors are neither visible nor palpable although a few have been demonstrated radiographically by deformity of the barium filled esophagus(135). A palpable mass

in the neck of a person thought to have hyperparathyroidism is rarely a parathyroid adenoma and usually turns out to be a thyroid nodule (Albright's Law)(32, 69). In line with these observations is the series of cases reported by Churchill and Cope in which only two of thirty parathyroid adenomata were palpable before operation(47).

The discovery of a parathyroid adenoma and its removal may be an easy or extremely difficult task depending on the size and the location of the lesion. One factor which should be kept in mind is that most operators have little or no personal experience with parathyroid surgery although they may be highly trained surgeons with considerable experience in thyroid surgery(87). This factor of almost unavoidable surgical inexperience is most likely one of the major causes of false negative explorations.

It has been stated that a normal parathyroid gland is easily recognizable grossly(24). However, some surgeons would cast doubt upon this statement(114). The normal gland is as a rule yellowish-brown and has a well defined but delicate capsule. The form of the glands is variable. The average weight of a single gland is between 30 and 40 mg. Preoperative chemical findings may give some clue as to the possible size of an adenoma since it has been said that the elevation of the serum calcium, and consequently the degree of depression of the serum phosphorous, is roughly proportional to the size of the tumor except in very large adenomas where the proportionality is less(43). The expected correlation of serum calcium elevation and adenoma size was not apparent in the series reported by Rienhoff(142).

In the performance of a cervical exploration in search of the cause of hyperparathyroidism the surgeon must be cognizant of several important possibilities which should be enumerated. A single adenoma (80% of cases) may vary greatly in size and may occupy any position from the neck to the mediastinum. An adenoma may be within the substance of the thyroid gland (2 to 3% of cases)(25), or may occupy an intrathymic position(33). The possibility of primary hyperplasia must be kept in mind since there is a specific surgical treatment for this condition. The most frequent cause of an unsuccessful surgical attempt for the cure of hyperparathyroidism in Hellstrom's experience lay in the presence of primary hyperplasia(87). More than one adenoma occurs in roughly 10% of cases; thus identification of a single adenoma should not halt an operative procedure until all glands are identified(24). Lastly, though, they are relatively rare (1 to 2%), one must be alert to the possibility of parathyroid carcinoma. Since the histological criteria of parathyroid carcinoma are of little help, the surgeon must detect gross invasion of surrounding structures before embarking on a more radical operative procedure(98).

The operative plan should be a primary search of the cervical region and, secondarily, the mediastinum. The operative field must be dissected in meticulous fashion and care should be taken to keep the area as bloodless as possible, since a small amount of blood will obscure the morphology of the parathyroids(142). All secondary operations for hyperparathyroidism are unsatisfactory because hemorrhage and scarring so obscure the parathyroid tissue that identification of each gland becomes virtually impossible. The responsibility for curing this potentially fatal disease rests largely with the surgeon who performs the first operation(24). The neck may be entered via a curved collar incision as is used in thyroid surgery. Upper and lower skin flaps are developed and the strap muscles divided. Since both sides of the neck are to be explored, it makes no difference which lobe of the thyroid is mobilized first(24). The superior parathyroid glands, which have less positional variability, may be inspected first and at this time one should be able to discover whether or not hyperplasia is present. The inferior thyroid artery and the recurrent laryngeal nerve should be exposed and cleaned as well as possible. Next one may divide the superior pole vessels so that the posterior surface of the thyroid may be easily inspected(105). Following medial rotation of the gland, the inferior parathyroid may be detected ventral to the recurrent nerve and the inferior thyroid artery. If the inferior gland is not in its usual location, the search may be extended to the pharynx, larnyx, carotid sheath, tracheo-esophageal groove, and the retroesophageal area(98). Following this, the posterior superior mediastinum may be easily inspected(24). Any branch of the inferior thyroid artery which runs downward should be followed since it may represent the blood supply to an adenoma which resides in the mediastinum(24). If no adenoma has been found after a

complete cervical dissection, the thyroid gland should be carefully palpated for the presence of nodules. If any thyroid nodules are found, the thyroid may be incised or a lobectomy may be performed either at the time of the original procedure or if hyperparathyroidism persists after a negative cervical and mediastinal exploration, subtotal thyroidectomy may be performed at a later date(24, 16). All four parathyroids should be identified although, as has been stated before, more or less than four glands may normally be present(67). It should be emphasized that normal parathyroid glands should not be removed; however, a minute specimen may be taken for biopsy purposes if the gross identification is uncertain. The presence, by frozen section, of atrophic glands is proof that the patient has hyperparathyroidism. However, the finding of normal glands should not negate the diagnosis because occasionally the uninvolved glands may appear normal, both grossly and microscopically(24,64). Before concluding that an adenoma is actually within the anterior superior mediastinum, three atrophic parathyroids should be identified in the cervical region and a fourth should be excluded by a reasonably extensive cervical dissection (24).

If a single adenoma has been found and the remaining parathyroids are atrophic, the procedure may be terminated at this point. One must be alert to the possibility of multiple adenomas. If primary hyperplasia is found, all four glands should be identified and a well vascularized fragment of hyperplastic tissue about three or four times the size of a normal gland should be preserved. Black and Sprague reviewed all reported cases of primary hyperplasia and concluded that hyperparathyroidism had not persisted when as much as 200 mg. of hyperplastic tissue had been saved, and that tetany had not ensued when as little as 30 mg. had been saved (26). In this condition, approximately 200 mg. of one gland should be preserved(32). It is obvious that weight estimation in terms of milligrams may be a difficult task.

In approximately 2 per cent of the series reported by Black and Zimmer, the patients had an unusual syndrome characterized by hyperparathyroidism and hyperinsulinism, and in three of the five cases by a pituitary tumor also. This syndrome is referred to as "polyendocrine adenomas" and more than one parathyroid is always involved and all glands may be involved. The adenomas tend to differ from the usual single adenoma in that the parathyroid enlargement seems to result from multiple nodules. As stated before, the proper treatment of multiple adenomas is removal of all enlarged glands. If all four glands are involved, a viable portion of one gland should be preserved to prevent tetany. Not enough cases have been reported. Thus, it is not known whether the parathyroid hyperfunction will return in such cases and how much tissue should be removed(27). The surgical management of parathyroid carcinoma has been discussed in another section of this paper.

If no source of parathyroid hyperfunction has been discovered after a thorough exploration of the neck one must be prepared to undertake a search of the mediastinum(69). There are varying opinions with regard to the timing of this secondary procedure. It is the feeling of Black that a mediastinotomy should not be undertaken for three months after a negative cervical exploration since a small undetected cervical adenoma may, in the interim, have undergone destruction or devascularization, with subsequent abolition of the hyperparathyroidism(24). Cope is in accord with Black in the feeling that mediastinotomy should be a separate procedure(52). A number of surgeons feel that mediastinotomy can be performed at the time of the cervical exploration without undue difficulty unless the patient is a poor surgical risk(99, 32, 142). In most cases, according to Goldman, when a nodule is palpable in the anterior superior mediastinum, the tumor can be removed through the cervical incision without the necessity of a sternal split (69). Rienhoff cautions that blunt dissection of the mediastinum through a cervical incision is dangerous from the standpoint of tearing blood vessels and pleura and is of the opinion that a sternal splitting procedure offers no great surgical hazard(142).

The mediastinal exploration may be accomplished by splitting the sternum from the manubrium to the third interspace with subsequent mobilization of the pretracheal fascia. Because of the embryological relationship of the inferior parathyroids to the thymus, the area of the thymus should be explored painstakingly. The exploration should also be conducted anterior and posterior to the innominate vein and laterally to the lung roots and pleura(98). If no tumor is

found elsewhere, total resection of the thymus should be performed(99).

Tetany occurs rather frequently following the removal of a parathyroid adenoma(24), and indeed this should probably be sought as an index of successful removal of all the hyperfunctioning tissue(69). Oliguria occurs following removal of these tumors, probably due to the abrupt decrease in the level of parathormone which has a diuretic effect. The development of oliguria may also be a welcome sign that hyperparathyroidism has been abolished(24). In cases without bone involvement there may be insignificant postoperative hypocalcemia(15). However, in patients with high preoperative alkaline phosphatase, an indication of osteoblastic hyperactivity, one may predict postoperative tetany(16).

The prognosis following parathyroidectomy is somewhat sobering. In spite of successful removal of the hyperfunctioning tumor, a significant percentage of patients go on to expire from progressive renal failure(85). Brenizer reports that a depressing 34 per cent of those treated went on to die from impaired renal function and/or cardiovascular complications of hypertension (32). It is readily apparent that the correct diagnosis and surgical treatment must be carried out before the skeleton, kidneys, and heart have become permanently damaged(32).

MILK-ALKALI SYNDROME (BURNETT SYNDROME)

This syndrome should always be considered in a patient with suspected hyperparathyroidism who also has ulcer symptoms. The fact that hypercalcemia might result from the treatment of peptic ulcer was observed as early as 1936(51). The diagnostic implications of this observation were brought forth in 1949 by Burnett, Commons, Albright, and Howard(37). They described the characteristic features of this disorder as follows: a history of prolonged and excessive intake of milk and absorbable alkali; hypercalcemia without hypercalcuria or hypophosphatemia; normal serum alkaline phosphatase level; renal insufficiency with azotemia; mild alkalosis; calcinosis manifested especially by an ocular lesion resembling band keratitis; and an improvement in the clinical state on an intake low in milk and absorbable alkali.

It may be important to differentiate between the hypercalcemia caused by the milk-alkali syndrome and a parathyroid adenoma. Although no single feature of the milk-alkali syndrome is completely dependable in ruling out hyperparathyroidism, certain measures are worthy of consideration(102). Persistent hypercalcuria on a low calcium diet may be helpful in ruling out the Burnett Syndrome and in establishing the diagnosis of hyperparathyroidism(122). The latter study is only of value if the milk-alkali syndrome has not progressed to the point of non-reversible renal failure. If irreversible renal impairment has occurred, the differentiation of these two conditions may depend on surgical exploration and examination of parathyroid tissue(102). Most of the reported cases have shown ocular calcification (band kerotopathy); thus, the absence of this variety of calcinosis is presumptive evidence against the Burnett Syndrome(102).

Since people with hyperparathyroidism frequently have ulcer symptoms and self medicate with milk and alkali, the differentiation may be particularly difficult(146). That the index of suspicion must be very high is supported by the fact that a number of cases have been reported in which a parathyroid adenoma has been found in cases in which the milk-alkali syndrome was suspected(102, 122, 14, 40).

ROENTGEN FEATURES OF HYPERPARATHYROIDISM

According to Pugh(135), only about one-third of patients who have hyperparathyroidism show sufficient bony abnormality to make the roentgen diagnosis possible. In this vein, it is of interest that only 9 per cent of Goldman's last 23 cases had evidence of bone involvement which is in marked contrast to the early history of hyperparathyroidism(70). The foregoing is a reflection of improved diagnostic measures and increased index of suspicion with the result that the diagnosis is being made before bone disease is apparent.

One may use the serum alkaline phosphatase as a screening measure for the detection of bone disease since skeletal roentgenograms will uniformly be unrewarding in cases with normal alkaline phosphatase. In those patients with hyperparathyroidism with elevated alkaline phosphatase, one may expect roentgen evidence of hyperparathyroidism unless there is some other reason for elevated levels of alkaline phosphatase.

There are several anatomical locations which may be of aid to the clinician if hyperparathyroidism has involved the skeletal system. The

most important of these are the hands, the skull, and the teeth.

Generalized decalcification of the bones of the hand may occur but the most distinctive, and indeed pathognomonic feature is subperiosteal resorption of bone best seen in the middle phalanges. There may also be resorption of the tufts of the distal phalanges. Subperiosteal resorption of bone is a "lacelike" decalcification of the cortical bone just beneath the periosteum. Though pathognomonic of hyperparathyroidism, this finding does not distinguish between the primary and secondary forms of the disease.

The dental features of hyperparathyroidism cannot be considered pathognomonic of the disease but they may be of aid in establishing the diagnosis. The absence of the lamina dura, which represents the cortex of bone around the teeth, is a further manifestation of subperiosteal resorption of bone. In some cases the lamina dura may be absent even when the rest of the skeleton appears normal(98). It is well to examine the bone around the teeth since the trabecular structure of the surrounding bone may be changed. The teeth appear abnormally dense in contrast to the surrounding bone because no calcium is lost from the teeth. The dental features of hyperparathyroidism have several shortcomings since the elderly are often edentulous and these features, if teeth are present, are not diagnostic of the disease. The lamina dura may also be absent in osteomalacia and Paget's disease. Again, the dental x-ray will not distinguish between primary and secondary hyperparathyroidism. It is of interest that a case has been reported in which there was redeposition of calcium following removal of a parathyroid adenoma with subsequent reappearance of the lamina dura(171).

Skull x-rays are not as rewarding as those of the hands or the teeth; however, they may be of aid in establishing the diagnosis. The skull shows a strange type of decalcification which renders the inner and outer tables indistinct. This peculiar decalcification of the skull may also resemble the roentgen picture of Paget's disease. Skull films, as is the case with the hands and the teeth, will not distinguish between primary and secondary hyperparathyroidism.

In addition to the roentgen findings already described there may be the better known classical form of osteitis fibrosa cystica with skeletal deformities, bone cysts, and pathological fractures. Generalized severe osteoporosis may also occur as a skeletal finding in hyperparathyroidism.

There are certain other conditions which may be considered in the roentgen differential diagnosis of hyperparahyroidism. The most important fo these is fibrous dysplasia of bone. This condition may be mistaken for hyperparathyroidism and may lead to unwarranted laboratory studies and even unnecessary cervical explorations. Pugh rightly points out the fact that for many years fibrous dysplasia was not distinguished from osteitis fibrosa cystica of hyperparathyroidism and it is unfortunate that this confusion has crept into the literature. Fibrous dysplasia of bone is not a disturbance of metabolism but a localized disturbance in growth and development of bone which usually appears during childhood and advances slowly until adulthood has been attained. There is no disturbance in calcium or phosphorous metabolism. Subperiosteal resorption of bone is never seen, there is never loss of the lamina dura, and granular osteoporosis of the skull is not seen. The condition can therefore be readily distinguished from bone disease caused by hyperparathyroidism if the hands, teeth, and skull are studied.

Renal osteodystrophy, or renal rickets, when it occurs in children may be roentgenologically indistinguishable from primary hyperparathyroidism. This condition is the result of prolonged renal insufficiency. Renal involvement may occur with hyperparathyroidism and the differential diagnosis should be made if at all possible since surgery is life-saving in primary hyperparathyroidism and of no use in cases of renal osteodystrophy. It is said that vascular calcification is much more frequent in cases of renal osteodystrophy than in cases of primary hyperparathyroidism although vascular calcification has been described as a diagnostic feature of hyperparathyroidism(12, 28, 145).

Other conditions of bone which must be considered in the differential diagnosis of hyperparathyroidism are osteomalacia and osteoporosis. A discussion of their x-ray features is beyond the scope of this discussion.

HYPOPARATHYROIDISM

In the face of current enthusiasm for improved methods of diagnosis and treatment of states of hyperfunction of the parathyroid gland, hypoparathyroidism has assumed an undeservedly

minor role in parathyroid literature.

The diagnosis and successful long-term treatment of hypoparathyroidism can be a stern challenge to the diagnostic acumen of the physician and can be an equally vexing problem to the patient who, much like a diabetic, must assume a large share of the responsibility in the management of his affliction.

The classification of hypoparathyroidism is of more than academic interest since the etiology is not always parathyroid damage at time of thyroid surgery and because the less common varieties of parathyroid hypofunction are also amenable to therapy.

The following is considered by the author to be a practical working classification of hypoparathyroidism:

(1) POSTOPERATIVE HYPOPARATHYROIDISM
   a. Surgical Tetany(98) (post-thyroidectomy hypocalcemia)
   b. Tetany following removal of a functioning parathyroid adenoma (69)
(2) IDIOPATHIC HYPOPARATHYROIDISM(163)
(3) PSEUDOHYPOPARATHYROIDISM (Seabright-Bantam Syndrome)(7)
(4) PSEUDO--PSEUDOHYPOPARATHYROIDISM

POSTOPERATIVE HYPOPARATHYROIDISM

The history of tetany or tetanic equivalents following thyroid surgery goes back to the year 1883 when Weiss, working at the time in Billroth's clinic, reported the first case of postoperative or parathyroprivic tetany(177). Since that time an enormous literature on this subject has developed.

It can readily be appreciated that many cases of hypoparathyroidism occur in this country each year when one considers that numerous thyroidectomies are being performed daily. Hypoparathyroidism most commonly occurs following those cases of thyroid surgery where inadvertent damage to, or removal of the parathyroid glands has taken place(9). The preceding would seem to be the sole mechanism involved; however, it would appear that there are other factors at play. That injury to or removal of the parathyroids during thyroidectomy does not always produce tetany is conceded by some observers, while others have reported its presence when every technical procedure to identify and preserve the parathyroids was meticulously carried out(66). For some unknown reason, the incidence of postoperative hypoparathyroidism is more frequent in women(104). Varying figures have been given for the incidence of postoperative hypoparathyroidism which range from 0.5 per cent to 1.5 per cent according to Swinton (168), to 3 per cent in the experience of Bell and Bartels, and Buckwalter(20, 29, 36) and as high as 6.3 per cent of 188 patients reported by Lachman(104). The diagnosis may be very obvious if tetany occurs following thyroidectomy; however, in the absence of tetany, the diagnosis may easily be missed(103, 172, 36).

Symptoms of parathyroid deficiency may occur within 48 hours(110, 183, 66), may become manifest in the week following surgery(36), or may not become apparent until years later when complications of uncontrolled hypoparathyroidism occur. A vague clinical picture following thyroid surgery may not be recognized as hypoparathyroidism and part of this diagnostic confusion may be due to associated hypothyroidism(136). Although much emphasis in the literature has been placed on the fact that the idiopathic variety of parathyroid insufficiency may go unrecognized, it is not so readily appreciated that postoperative hypoparathyroidism may be completely overlooked(103). Reckendorf and McGavack have reported a case of postoperative hypoparathyroidism which occurred almost 30 years after thyroidectomy and was apparently made clinically manifest at time of menopause (137). A perusal of parathyroid literature would suggest that parathyroid dysfunction following surgery is usually transient; however, the experience of Buckwalter, et al, would indicate that parathyroid deficiency of permanent nature following thyroid surgery is not infrequent(36). Since there is no effective therapy for many diseases, their recognition is of secondary importance; however, in the majority of instances of hormonal deficiency the results following therapy are so gratifying as to compel early diagnosis. This is particularly true of hypoparathyroidism (103). Postoperative tetany may be a welcome sign following removal of a parathyroid adenoma since it may be an indication of complete ablation of all excess parathyroid tissue(69). The symptoms of hypoparathyroidism may be varied and vague(75, 109). There may be latent tetany, fatigue, muscular weaknesses, gastrointestinal ir-

ritability, attacks of unconsciousness, epileptiform seizures, cramps of the extremities, numbness of the extremities, carpopedal spasm, laryngeal stridor, mental dulling, frank psychosis, generalized muscular rigidity, opisthotonos, prolongation of the electrocardiographic QT interval, cataracts, disturbances in nail growth, sparse dry hair, and severe headaches(36, 172, 72, 136). The "ectodermal triad" consisting of dry skin, sparse hair, and ridged brittle nails is frequently regarded as a manifestation of hypothyroidism and may mask a case of hypoparathyroidism (104, 71). Kyle, Schaaf, and Meyer state that in a patient who has undergone thyroidectomy, the following situations, regardless of the time which has elapsed since thyroidectomy, should make one seriously consider the dilagnosis of hypoparathyroidism(103):

1. Tetany or tetanic manifestations.
2. Appearance of cataracts at any age.
3. Epileptiform manifestations.
4. Basal ganglia calcification.
5. Increased intracranial pressure with papilledema.
6. Chronic skin disease.
7. Hyperventilation syndrome.
8. Instances of psychosis with various neurotic manifestations.
9. Occurrence of any muscle or joint symptoms which may be attributed to muscle spasm.

One must suspect the diagnosis when certain unexplainable syndromes occur, particularly in individuals who have undergone thyroidectomy(172). It should be emphasized that progression to non-reversible complications such as cataracts, convulsive disorders, and mental deterioration may occur in the patient who has none of the common stigmata yet has uncontrolled hypoparathyroidism(36). As in the case of hyperparathyroidism, the clinician must have a high index of suspicion if certain permanent sequelae are to be avoided. In Buckwalter's series, the only common denominator in those who developed complications due to postoperative hypoparathyroidism was a prolonged period during which the hypoparathyroidism was uncontrolled(36), which further spotlights the need for early diagnosis and treatment.

IN THREE PARTS – CONTINUED

Editorial

OUR UNIQUE PROFESSIONAL STANDING LOST

There is an increasing concern about the diminishing number of QUALIFIED YOUNG MEN who choose MEDICINE as their career. It is, indeed, deplorable that we who have been carrying the banner of medicine have to answer – Why has Medicine lost its commanding position in minds of men?

The Council on Medical Education and Hospitals of our A.M.A. have made a statement which is a debasing reflection on our reputation. They state – "Medicine is finding increased competition for the pool of top-ranking students because it no longer occupies the unique position as a profession which it held in the past –."

It is, indeed, a paradox, that we should be losing the respect of those whom we serve, during the last twenty years, while simultaneously there has been more scientific progress in the relief of human ills than had been made in all previously recorded history.

The Western Interstate Commission for Higher Education has cleverly tried to excuse our position in their statement – "There are now many more professions competing for available manpower which confer prestige, intellectual satisfaction and monetary award." Their analysis can not be wholly correct, because there can be no greater prestige than that which comes from the proper direction of human emotions, the relief of suffering, and the prolongation of life. The intricate scientific advancements of

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CONTRIBUTIONS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules should be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English or Spanish, especially with regard to construction, diction, spelling and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Exclusive Publication – Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
7. Reprints will be supplied to the author at printing cost.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

medicine tax the intellect to the maximum, and Medicine still ranks high in monetary awards.

It will be a catastrophe if the prestige of Medicine sinks further in rank in the fields of human relationships.

The contention that our prestige has declined is statistically supported. From 1920 to 1955 the percentage of college age population, enrolled in institutions of higher education, increased from 4.6 to 18.2 per cent; but during the same period, the number of college students who went on to study medicine dropped from 2.4 to 1 per cent of those going on into graduate or professional fields. A further decline of 0.6 percent is expected by 1965. The number of individual applicants to the medical schools in the United States has dropped from 24,242 in 1948 to 15,791 in 1957-58. There was one less graduate of medicine in 1958-59 than in 1957-58 (6,860 and 6,861 respectively) and 117 less than in 1954-55. This is during a time of increasing population, when it is estimated that we will need a gradual increase to 10,000 graduates a year by 1975. These statistics, when added to the many disputable accusations made by the writers in our non-professional popular magazines, justify the conclusion that something must be wrong.

Our admission of failure is further exemplified by our advocation of the implementation of career programs, to induce young men to pursue a profession which formerly had no peer. Our problem in the past was that it excluded many of those qualified persons who dedicated themselves to a career for the relief of human suffering.

During the last 25-30 years, scientific medicine has advanced more than in all previously recorded history — the average American is demanding twice as much service from the individual physician — and people are being hospitalized three times more frequently. Has the rank — and — file of the medical profession become too secure and too smug in its unique position? Has our pre-occupation made us derelict in the fulfillment of our over-all purpose? Have we become so dependent on our material scientific achievements that we have forgotten the social sciences? The answer to these questions is — yes!

We have, by indifference, failed to properly convince society that we sincerely have fulfilled our obligations to them. We have failed to honestly display our relative economic attainments. Above all, we have failed in our presentation of the contrasts between our free-enterprise system of medical care and the welfare-socialistic systems. We have failed to take the extra time and steps necessary to convince the public that the present communal advances will inevitably result in an insufferable catastrophe.

Young men are avoiding medical careers because of the trend toward socialized medicine. They are choosing professions which are more materialistic in scope, because materialism can be more easily comprehended by the selfish politician, who will be in control.

God will need to help humanity whenever the controlling segment of our society decides that science has advanced sufficiently to justify the governmental management of the health of its sentimental peoples by the distribution of "miracle drugs."

— *L.B.S.*

STEROID THERAPY IN OPHTHALMIC LESIONS

A REPORT published in the Journal of the American Medical Association July 25, 1959 by Irving H. Leipold, M.D., Philadelphia, emphasizes the importance of accurate diagnosis of ocular lesions prior to the use of steroids for treatment. There are many inflammations of the eye which respond well to the local instillation of steroid drops, such as contact dermatitis, rosacea-keratoconjunctivitis, vernal conjunctivitis, allergic conjunctivitis, allergic keratoconjunctivitis, marginal corneal ulcers, and phlyctenulosis. The article emphasizes that in addition to these lesions which seem to respond to this medication, there are many lesions that do not respond to steroid medication and there are some inflammations which seem to be aggravated by the instillation of steroid drops. Some bacterial ulcers of the cornea might respond to steroid therapy if administered with an antibiotic which is specific for the infection. However, the presence of a herpes ulcer of the cornea is a definite contraindication to the use of steroids. It might result in a perforation in the cornea if used injudiciously. Most conjunctival inflammations will respond well to a specific antibiotic and the presence of a steroid is not often necessary or helpful in the control of the inflammation. Steroid therapy may

reduce the local reaction, but may interfere with natural resistance. Fungus infections of the cornea can be produced experimentally by pretreatment with steroids.

A safe rule to follow for safe use of steroids in external ocular disease should be that when doubt exists as to diagnosis, or the likelihood of an unfavorable result from steroids, steroids should not be used. In general, it might be wise for most general practitioners to use the rule that if a local antibiotic does not show a reduction in the appearance of the inflammation in 24 to 48 hours, the patient should be referred to a qualified ophthalmologist for further evaluation and treatment.

A.K.H.

ANOTHER NEW JOURNAL

The advent of another new journal in the cluttered field of medical publications may raise eyebrows other than this reviewer's. C. V. Mosby Company, publishers of the new bi-monthly *Clinical Pharmacology and Therapeutics*, official publication of the American Therapeutic Society, claims that the extensive literature on pharmacology is "hopelessly scattered among all medical journals. Obviously, no family physician can find by himself the significant information he must have to employ potent pharmaceuticals effectively and safely. More deplorable than the disordered state of the literature is the fact that much of it is uncritical, leaving the reader with little more dependable information than he had before he read it."

The list of authorities comprising the Editorial Board leaves no doubt as to the quality of the new journal, and critical evaluation of the material published would seem implicitly assured. Just how the business manager is going to finagle the continuing sale of advertising space to a drug manufacturer whose product gets a lacing in the scientific text is a problem — yes, indeed.

This reviewer has no answer to that one, but he does seriously question the announcement blurb: "Here is news that family physicians have long awaited." The family physician, already submerged by the flood of "must-be-read" literature in the medical and ad-ante-con-in-inter-ob-post-prae-pro-sub-super and para medical sciences, is not likely to latch on to *Clinical Pharmacology and Therapeutics* as the long-awaited answer to his needs. Many of us who happily discovered and liked the critical evaluations as presented in *The Medical Letter* (a non-profit publication on drugs and therapeutics issued twice monthly) will continue to read it.

C.L.R.

INCRIMINATED

"I do not believe that anyone can do anything to get kicked out of this Medical Society." This statement was made recently, by a reputable physician, following a discussion at a Medical Society meeting relative to the professional behavior of one of its members. Such a statement implies that even now, after we have been duly warned, we are still derelict in our directed obligation to police our own membership.

The editorial — "Policing the Ranks" (AMA News — January 25, 1960) states our responsibilities very clearly. This admonishment is embellished with such epigrams as . . . "All that is necessary for the triumph of evils is that good men do nothing." (Edmund Burke) and "One man can't build a big organization but one man can tear it down" (FBI slogan). Because of its timely significance, the AMA editorial is reproduced below in hopes that we may restudy it — it is not "filler".

Let us not become a part of the — "increasing moral slump" — recently referred to by the former President, Herbert Hoover — or play into the hands of the socializers who use our frailties to advance class hatred . . . which is essential for the establishment of their degrading "isms".

LBS

POLICING THE RANKS

All that is necessary for the triumph of evil is that good men do nothing. — Edmund Burke.

The good reputation of the many often is at the mercy of the few.

Dissatisfaction with one physician's services, his charges or some other aspect of medical care can result in complaints that undermine the confidence of the public in the entire medical care system of a community. Even though many complaints are unjustified or stem from misunderstanding, their existence can create a serious public relations problem.

One solution to solving this problem has been found to be an active and dedicated grievance or mediation committee in each medical society. The committee provides a sounding board for the grievances, imagined or real, of patients whenever disagreements cannot be resolved on

an individual basis. By justly handling disputes and rendering a fair decision, these committees demonstrate to the public the desire of the medical profession to bring the best medical care to everyone and to serve the public interest.

But if these grievance committees are to be effective in asissting to maintain the high levels of professional deportment already established by the *Principles of Medical Ethics*, they must be empowered with authority to receive complaints, to investigate, mediate, arbitrate, and, where necessary, refer them to appropriate bodies for adjudication.

Many medical societies now have bylaws that give their mediation committees full power to determine a fair fee in any case brought to its attention. And it can recommend suspension or expulsion from the society for any practitioner who flouts its will.

While organized medicine has no built-in power to crack down on doctors who demand excessive fees, fail to respond to calls, and so forth, any medical society that wants to discipline its members may amend its bylaws accordingly.

Unless the few recalcitrant physicians are disciplined, the whole profession will be tarred with the same stick which should be applied to the few.

Such self-regulatory machinery is not primarily to defend doctors, but to protect patients and assure them their rights. But again to be effective, the public must know of the committee's existence and understand how to use it. Committee members must be willing to perform delicate and sometimes odious tasks. And unless a committee accepts its responsibility to act upon a complaint fairly and with a minimum of lost time, its effectiveness is questionable.

Since it is the bad apple in the barrel that causes complaint, the medical profession cannot afford to shelter the doctor who puts himself above the profession and the public he serves. For in the practice of medicine today, a physician's every action reflects not only upon himself but also on the entire profession. To besmear an entire profession with the misdeeds of a few, is an injustice of the rankest sort.

While it is never pleasant to find a colleague out of line and to recommend some form of discipline, it is the responsibility of the profession to police its own ranks and to eliminate professional incompetence and economic abuses. The FBI slogan, *"One man can't build a big organization but one man can tear it down,"* applies to medicine, too.

If local societies fail to curtail unethical practices, ethics lose their effectiveness. And the public soon loses confidence in the profession as a whole.

Dr. David B. Allman, past president of the AMA, stated it so well when he said, "If we individual physicians do not keep medicine's house in order, outside organizations — like . . . government — will do it for us. That is why medical grievance committees are protecting the honest and capable physicians as much as they are the patient."

Grievances and misunderstandings are bound to occur as long as the principals involved are human beings. But such grievances should be resolved, whenever possible, to the mutual satisfaction of both the patient and the physician.

While there is a slight difference between being unethical per se and not serving the best interests of the public, neither can be tolerated if the profession as a whole is to deserve the great confidences reposed in it by the public.

FOUNDATION FOR THE BLIND

The American Foundation for the Blind reports that more than one thousand blind students are enrolled in colleges and universities in the United States.

In Memoriam

CHARLES A. THOMAS

1877-1959

Charles A. Thomas, M.D.

Dr. Charles A. Thomas, pioneer physician and surgeon in Arizona, passed away on November 5, 1959, after a prolonged illness 10 years after his retirement from active practice.

Dr. Thomas was born in Brandon, Mo., 82 years ago, and he graduated from Tulane University at New Orleans in 1905, after which he practiced in Oklahoma for several years.

He came to Tucson in 1912, and his strong personality and devotion to Medicine were immediately felt in this community.

A surgeon for the Southern Pacific Railroad, he was the driving force behind the founding of the Southern Pacific Tuberculosis Sanatorium in Tucson in 1931. He remained as assistant to the chief surgeon of the Southern Pacific Company until his retirement in 1946.

In 1920, together with his friend, Dr. S. C. Davis, he founded the Thomas-Davis Clinic, and was the guiding spirit of this group for 27 years.

Dr. Thomas had the distinction of being one of the pioneers in chest surgery, having been interested in this branch of surgery since its inception. He was one of the first surgeons to do thoracoplasty for the treatment of tuberculosis, and performed the first lobectomy in Tucson.

During his life, Dr. C. A. Thomas acquired many well deserved honors in Medicine and civic life.

He was a charter member of the College of Chest Physicians, a Fellow in the American College of Surgeons, past-president of the Pima County and Arizona State Medical Societies, and honorary member of the Sonora, Mexico State Medical Society – as well as past-president and honorary member of the staff at St. Mary's Hospital.

During World War I, he was a major in the Medical Corp, and served as surgeon at Walter Reed Hospital. During World War II, he served as chairman of the local office of Procurement and Assignment.

With his passing, Dr. Thomas has left a void in the community which cannot be filled; and his death is lamented not only by his bereaved family, but by the numerous friends in this country as well as below the border.

RESOLUTION:

WHEREAS, the death of Charles A. Thomas, M.D., in his 83rd year, marks the end of a distinguished career in the profession of medicine, in no sense does it end his influence for good in the community where he served so faithfully and so productively, and

WHEREAS, in particular, the Pima County Medical Society was privileged to have his guidance and wise counsel throughout the many years he labored for the Society in various offices of responsibility, including the Presidency,

BE IT THEREFORE

RESOLVED: That the Pima County Medical Society inscribe in its permanent records its recognition of enduring gratitude to an honored colleague, and convey to Doctor Thomas's family an expression of deep sympathy in their bereavement.

Arizona Medical Association Reports

PROFESSIONAL LIAISON COMMITTEE

SUBCOMMITTEE REPORTS

Allied Professions

Robert H. Cummings, M.D., chairman, reported that on January 17, 1960, on invitation, he attended a meeting of the Arizona State Chiropodist Association for the purpose of reviewing a movie film developed by that group. It was produced at the Hackensack General Hospital, New Jersey, a 350-bed general hospital having a clinic in chiropody, with an appreciable patient load. This clinic is useful in management of peripheral vascular disease, predominantly in diabetes, and as an accessory to the activities of the orthopedic department. The film was produced by Wyeth.

The film itself represents a very artistically produced medical film, in color, running time about twenty minutes. It emphasizes, with picture and discussion, the role of the chiropodist in the clinic of that hospital. The cases documented are scientifically worked up and presented; and the chairman came away with the feeling that this branch really offers something, if it would be used. Their technique for treating diseases of the foot are well conceived, and based on good medical practice.

Approval of this film as a vocational education film is sought of this Association. Last year the Chiropodists sought to exhibit it at the annual state meeting of this Association. Facilities were not available; however, it was suggested that the film be shown at the County level which, of course, they are willing to do. The Chiropodists feel that there are young men, who by preparation, or by inability to complete a medical education, might be interested in another branch of the healing art, in this case, namely, chiropody.

Doctor Cummings recommended that we extend a hand to these men, and attempt to expedite their showing of this film at the County level, and possibly at the State level, as an exhibit. For the purpose for which they wish to display this film, if the movie is not homophil to the practice of medicine and if they wish to show it to the groups stated, possibly it is alright. If they want to show it at societies, that is up to them to make contact. As the chairman only and without action by the subcommittee, and the subcommittee would be glad to look at this film if you would like it to do so, as a group, I would like to recommend that we extend a hand to this group (Chiropodists) and help them to show the film to County Societies.

Another item of import concerning this subcommittee which the chairman brought to the attention of the committee as a whole was the prompt response by the President of the Association, Doctor Melick, to the White Mountain Committee's Hospital Association, Inc. of Springerville. The question posed was: "What will the Association's reactions and standing to Doctors of Osteopathy being on the hospital staff be?" The President responded that the Principles of Medical Ethics provide in part:

"A physician should practice a method of healing founded on a scientific basis; and he should not voluntarily associate professionally with anyone who violates this principle."

Further, that the House of Delegates of the American Medical Association in June last, regarding relations between doctors of medicine and doctors of osteopathy, established the following policy:

"All voluntary professional associations between doctors of medicine and those who prac-

tice a system of healing not based on scientific principles are unethical."

In conclusion, Doctor Melick stated that this Association would not, at this time, consider it ethical for doctors of medicine to serve on a hospital staff with doctors of osteopathy.

IT WAS MOVED by Doctor Frissell, seconded by Doctor Bean and unanimously carried that the report of Doctor Cummings be accepted.

Arizona AMEF

In the absence of Harold W. Kohl, M.D., chairman, Doctor Steen presented in his behalf the following report:

The annual dues increase of $10 per active member of the Arizona Medical Association, Inc. which was voted by the House of Delegates in 1957 has continued in force, and has served as a nucleus for the contributions by the medical profession of Arizona to Medical Education. Many other States have adopted this plan, some with dues increases as high as $25.00 per member earmarked for AMEF. It seems probable that other State Medical Associations will adopt similar plans this year.

The "Arizona Plan" with which we are all now familiar has found favor with pharmaceutical associations in many other States. While currently the figures are not available, it is evident that the action of the "Arizona Plan" resulted in a sizeable addition to the earmarked funds contributed in 1959 through AMEF to Medical Education. In Arizona alone, with the compilation yet incomplete, the contributions by pharmacists to Medical Education under the "Arizona Plan" will exceed $1,000. A booklet "The Arizona Plan" and a copy of a letter circulated in October, 1959 by Mr. Alfred J. Duncan, secretary of the Arizona Pharmaceutical Association, are on file.

The Woman's Auxiliary to The Arizona Medical Association has been a great force in the campaign for funds for aid to Medical Education. Many hundreds of dollars have been raised by our ladies through bridge marathons and other projects, including a great deal of thought and effort. We owe the members of our Auxiliary a vote of gratitude and praise.

Since Arizona adopted the dues increase of $10.00 earmarked for Medical Education through AMEF there has obviously been more interest on the part of the medical profession in the needs of Medical Education. As a result, many members of our state association contributed in 1959 amounts ranging from $10.00 to $300.00 over and above the $10.00 that each contributed through their annual dues.

It is strongly urged and recommended:

1. That the Woman's Auxiliary to The Arizona Medical Association, Inc. be informed by a letter to be read at its annual business meeting in 1960 of the gratitude we express and of the support we pledge to them in their continued efforts.

2. That the dues increase of $10.00 per active member per annum earmarked for aid to Medical Education through AMEF be held inviolable until such time as it may seem practicable to increase that amount.

3. That all doctors in our State contemplate well the financial needs of our medical schools as well as the constant attempts at each Session of Congress to introduce bills to subsidize educational institutions, including medical schools; and that each individual one of us ask ourselves," Have I done my part in helping to preserve medical education in the United States free of government control and dictation?"

IT WAS MOVED by Doctor Frissell, seconded by Doctor Young and unanimously carried that the written report of Doctor Kohl be accepted.

Careers

Zenas B. Noon, M.D., reported that possibly the most important accomplishment at this meeting would be to determine upon the membership composite of his subcommittee. Suggested names of members of the Association have been previously compiled, reviewed by the President, Doctor Melick, and it has been suggested that the membership be selected on a geographical area basis, pointing out that it might be wisdom first to select within the subcommittee membership composite an "Executive Committee" who will comprise the directive force and leadership in carrying out the intents and purposes of the activity. The following members were so recommended to comprise the executive body and, following its establishment, then an "advisory" group could be appointed and in effect comprise the working body in the field:

COCONINO: Dr. Young, Roy O. (Flagstaff).

MARICOPA: Drs. Green, John R. (Phoenix); Lawrence, Howard C. (Phoenix); Matte, Jr., Paul J. (Phoenix).

PIMA: Drs. Dexter, Richard L. (Tucson); Havemeyer, William F. (Tucson).

SANTA CRUZ: Dr. Noon, Zenas B. (Nogales).

Doctor Noon presented and read a most informative article dealing with medical education.

It was directed that the members selected (as listed above) be contacted by letter, informing them of their appointment to membership on the subcommittee on Careers to serve as the Executive body of the group.

Government Medical Staffs

William G. Payne, M.D., chairman, presented and read the contents of a letter dated December 10, 1959, signed by the president, Kent O. Hanson, M.D., and the secretary, John F. Kahle, M.D., of the Coconino Medical Society expressing the concern of the doctors comprising that Society regarding the operation of the Navajo Ordnance Depot Hospital, located approximately twelve miles west of Flagstaff off Highway 66. It appears that the Medical Staff of this installation comprising three doctors of medicine on active duty in the Medical Corps of the Army of the United States, two enlisted men and four other Army officers, are serving the medical needs of the military personnel but, in addition, are providing medical care for over four hundred civilian civil service employees and their dependants working at N.O.D. Inasmuch as there exists adequate hospital facilities and civilian medical personnel serving this area in Flagstaff, it is the desire to effect the discontinuance of providing medical and hospital services to civilian personnel by the military forces. Doctor Payne reported that, while his subcommittee has not to date held a formal meeting, an investigation is proceeding. Discontinuance of these services to civilian personnel must be effected at the top level in Washington. This can best be approached through contact with our Congressmen, and possibly Senator Barry Goldwater could be interested to develop the facts.

IT WAS MOVED by Doctor Payne, seconded by Doctor Bean and unanimously carried that the committee recommend to the Board of Directors that a memorial be prepared and forwarded to the appropriate designated authorities protesting the current practice of using military personnel and facilities to hospitalize and medically treat civilian civil service employees of the Navajo Ordnance Depot.

Nurses

Francis J. Bean, M.D., chairman, reported that while his subcommittee has held no actual meeting, the majority of its members were present at a special meeting of the Board of Directors of this Association held 12/13/59, called to meet with members of the Arizona State Nurses Association and the Arizona Federation of Licensed Practical Nurses. Only members of the latter group attended, the registered nurses having conflict with a previously scheduled meeting of their own. It was determined by the Board at the conclusion of this meeting that the subcommittee on Nurses review the entire matter, meeting with representative groups of each of these bodies, as said subcommittee may determine wisdom and report back to the Board through the Professional Liaison Committee. This directive was just recently received by the subcommittee.

Doctor Bean is of the opinion that there are certain subjects of mutual interest which could profitably be discussed by representatives of both these organizations, and an effort should be made to bring this about. It is anticipated each of these groups will welcome the opportunity to confer with medicine. Some of the subjects requiring discussion were outlined as follows:

1. Present trends in education of nurses.
2. Sources of supply of nurses; recruitment programs.
3. Recogition by the medical profession of different categories of nurses.
4. Programs and activities of Arizona State Nurses Association as they relate to physicians.
5. The position and activities of the economic counselor of the Arizona State Nurses Association.
6. Public Health nursing needs.
7. School nursing programs.

It is believed desirable that the Board of Directors correspond with the Arizona State Nurses Association, informing them of the opportunity to meet with this subcommittee for the purpose of discussing problems of mutual interest; further, that the Arizona League of Nursing be included and similarly so informed, as should also be the Arizona Federation of Licensed Practical Nurses.

IT WAS MOVED by Doctor Frissell, seconded by Doctor Young and unanimously carried that

the report of Doctor Bean be accepted.

Physicians and Surgeons Association

In the absence of Lavern D. Sprague, M.D., chairman, there was presented and read his written report:

"The object of the subcommittee for the present year will be the adoption of a resolution by The Arizona Medical Association along the lines of the resolution originally adopted by the Medical Association of the State of Maryland, providing for limitation of federal medical care of all veterans to service-connected disabilities. A copy of these recommendations has been forwarded to all state medical societies and to the A.M.A. by the House of Delegates of the Maryland Association in the past. They are anxious to get considered action by all state medical societies so that there will be a reasonable chance of obtaining a Congressional hearing before the House Veteran's Affairs Committee during this Session. All members of the subcommittee have received extensive literature concerning this problem, but we have not as yet met formally for discussion. A meeting is planned for the near future."

IT WAS MOVED by Doctor Young, seconded by Doctor Bean and unanimously carried that the report of Doctor Sprague be accepted.

Public Health

Ben P. Frissell, M.D., chairman, reported that the subcommittee on Public Health was created as a part of the Professional Liaison Committee of The Arizona Medical Association, Inc. as a result of a resolution passed at the last annual meeting of the Association.

The functions of the subcommittee are twofold:

1. To work in closer liaison with the Public Health Department in order to avoid misunderstandings between the various County Societies and the Department.

2. To work toward development of a better Public Health program in the State.

Two formal meetings have been held by the subcommittee on November 8, 1959 and January 31, 1960. In addition, there has been much communication between members of the subcommittee by correspondence, telephone and personal visits, etc.

One of the first problems considered by the subcommittee was the dissatisfaction in certain segments of the Association over the problem of the multiphasic screening program being carried out currently by the State Department of Health, particularly as it pertains to Diabetes. Representatives from the subcommittee and other interested physicians have consulted with the County Societies in two areas and held open discussion of this problem. To date nothing more than an airing of views and opinions has been accomplished but it is hoped that in the overall effort the problem may be resolved. We have a communication from The American Medical Association on this problem. It does not bring out any firm policy at the national level; it appears that in some areas of the country the programs are well received, while in others the doctors are opposed to it. A copy of a letter from Doctor Francis D. L. Lukens is on file for reference. Doctor Lukens, president of the American Diabetes Association, is writing in reply to a letter of inquiry addressed by Doctor Eleanor Waskow at the suggestion of the subcommittee chairman. In essence, Doctor Lukens' letter brings out the fact that it is the policy of the Diabetes Association on a national level to cooperate closely with the Public Health service in conducting surveys and that they feel that this is, for the most part, the manner in which the problem should be handled at the local level. It is the hope of the subcommittee on Public Health that our problem may be handled eventually by more active leadership and participation on the part of the local doctors with the cooperation of available Public Health resources.

In our efforts to assist the State Health Department, it was our agreement at the first meeting of the subcommittee that the most urgent problem facing the State Department of Health is the replacement of the present Commissioner by the time of his retirement in April, 1961.

It was felt that immediate steps should be taken to place this matter before the Legislature at its January, 1960 Session in such a manner that the statute pertaining to the salary limitations and qualifications for the Commissioner should be altered. After consultation with the Governor's office, the legal counsel of the Association, several qualified Public Health persons and a review of model Public Health legislation, a rough draft of a bill to change the existing statute was drafted by Mr. Robert Carpenter (to establish the salary of the Commissioner, not to exceed $17,500 per annum, to be determined by the State Board of Health, subject

to legislative appropriation; and to further elaborate upon qualifications for such position to the effect that, among other things, a Commissioner "shall have at least one year of graduate study in a school of public health approved by the Council on Medical Education and Hospitals of the American Medical Association or its successors" and "shall have had no less than three years' experience in administrative practice as a full-time public health officer") and turned over to the Legislative Council of the Legislature. A copy of this legislation is on file for reference. The strategy followed by the subcommittee in following through on this situation to date has been largely laid down by Mr. Frank Snell. The approach has been on an informal basis. Members of our subcommittee, together with other interested State Association officers and members, including Doctor Reed Shupe of the Legislative Committee, have met on several occasions with key members of the Legislature, particularly chairmen and vice-chairmen of the Appropriations and Public Health Committees of both the House and Senate. Likewise the personal support of Association members who have personal acquaintance with key legislators has been enlisted by letter and the response in practically all instances has been excellent. An attempt has also been made by the subcommittee to appraise the leaders of the House and Senate in both the Committees of the dire need for more liberal treatment of the appropriation needs of the Department in order to hold key personnel and to improve the functions of the Department.

Although it is early to assess the results of these efforts, we are encouraged to feel that some progress has been made. The reception of our members by the political bodies has been in all instances courteous and friendly. We have been asked on several occasions to meet with the Board of Health, the last such meeting was on February 4, 1960 at the request of a Subcommittee of the Senate Appropriations Committee treating specifically the problems of the Public Health Department.

With respect to the future functions of the subcommittee on Public Health, we offer the following:

1. We feel that the need for closer and continued liaison between The Arizona Medical Association and the Department of Health is well established. To accomplish this end, it is suggested that each County Society be urged to appoint a Public Health Committee, or at least one interested member depending on the local situation, which would meet from time to time with the local Board of Health if available (otherwise, the State Department of Health) about matters pertaining to local issues. In turn, each County have a representative of this group to meet with the State Subcommittee on Public Health on at least a biannual basis. One of these meetings could coincide with the annual Association meeting; the other approximately 6 months later. We have every reason to believe at this time that our efforts are well received by the State Health Department and by the State Board of Health, and it is anticipated that close relationships be maintained between the subcommittee and these agencies.

2. We feel that there is a need to encourage and promote the development of more local or district Health Departments in the various areas of the State not now provided with adequate Public Health facilities.

3. There is need for disseminating more information to the doctors of the State on Public Health needs and problems. It is suggested that perhaps a Public Health section be set up in "Arizona Medicine" or at least periodic articles pertinent to Public Health should be published in this vehicle.

4. It is a recommendation of this subcommittee that doctors of the State at a community level need to assume more active leadership in Public Health problems affecting the various communities; using as an example the Polio vaccination programs, etc., which need the leadership of physicians rather than lay groups. In these endeavors, it is hoped that local Public Health facilities will be tied into the program wherever possible.

5. We stress the need for a well-integrated school health program. It is hoped that this subcommittee may work in close cooperation with the Association Committee on School Health in an attempt to put into effect an adequate program under sponsorship of the State Department of Health.

6. Inasmuch as the major legislative effort of our Association will of necessity be directed in Public Health fields, we hope to lend our efforts whenever possible to the Legislative Committee.

There is need for an overall revision of the Public Health statutes of the State which are agreed to be weak and ambiguous in many respects. Careful study by experts in law and Public Health will be required for this effort.

7. Likewise there is the need for a Public Health survey to pinpoint the current Public Health needs for the various segments of the State. The last survey was made approximately 5 years ago by the U. S. Public Health Service. Due to the unprecedented growth of the population of the State in the past decade, it would appear to the subcommittee that such a survey should be repeated in the next 1-2 years.

8. It is the feeling of this subcommittee that the Dental Association, which has been quite active in Public Health effort the past few months, should be included in our program. Steps have already been taken in this direction with two meetings being held with representatives from the Dental Association these past few months.

9. Last but not least, it is felt that our efforts on behalf of the Public Health Department should be shared with other responsible lay groups and health organizations (PTA, Federation of Women's Clubs, Heart, Cancer and TB Associations, etc.)

IT WAS MOVED by Doctor Cummings, seconded by Doctor Smith and unanimously carried that the report of Doctor Frissell be accepted.

Doctor Melick stated that Doctor Frissell has kept in close contact with him in carrying out the objectives of his subcommittee assignment, commending Doctor Frissell for his accomplishments to date.

Schools

Noel G. Smith, M.D., chairman, reported on the activities of his subcommittee on schools, pointing up the activities of the State Advisory Committee on School Health. This Committee is composed of the various representatives comprising the State Department of Public Instruction; State Health Department; State Medical Association(?); State Dental Association; Division of Indian Health, U.S.P.H.S.; Bureau of Indian Affairs; State Nurses Association; University of Arizona; Arizona State University; State Congress of Parents and Teachers; State School Administrators Association; State voluntary health agencies; the Tucson-Glendale and Phoenix Union High School and elementary systems, and others. Generally, its objective is to explore and study school health problems and recommend approach in resolving the issues in an advisory capacity.

IT WAS REGULARLY MOVED by Doctor Young, seconded by Doctor Frissell and unanimously carried that it be recommended to the Board of Directors that this Association be officially actively represented on the State Advisory Committee on School Health, and that Noel G. Smith, M.D., chairman of the subcommittee on Schools of the Professional Liaison Committee be designated such representative.

The State Congress of Parents and Teachers, in cooperation with the State Advisory Committee, has endorsed the project and will work through the State P.T.A. in arranging a series of community meetings on school health in the year ahead leading toward the recommended employment of a state school health coordinator as one possible step toward solving some of the urgent needs outlined. Consideration of (a) School Health Workshops, (b) College-level Health Courses for Teachers, (c) Health Education Courses at Pre-Secondary and Secondary level, (d) Coordinating Committee on School Health reactivation, (e) Revision of the School Health Handbook, and (f) Special Reports and Surveys on School Health in Arizona, are listed among the needs for early review.

A "Report of School Program Survey" made by the State Advisory Committee was reviewed and discussed. Its conclusions and recommendations drawn appeared to be in accord with the ideas of this subcommittee.

Considering the details of School Health Services, following are the recommendations therefor as they may apply to the State of Arizona. Such services in all cases should be designed to protect pupil health, to promote the maximum emotional, mental, and physical health of the child in order that he may most effectively function during the school day, and based on accepted standard, adaptability of plan to community of operation and influenced by local custom, professional personnel and other services available. They are:

A. Determination of Health Needs.

1. Complete health examination by the Family Physician in his office of all children starting school for the first time, to include: (a) complete medical history; (b) thorough physical

examination; (c) counseling on adjustments to be made by the child starting school; and (d) recommendations for correction of abnormalities, and any special instructions with regard to safeguarding the child in his new school environment. Completeness of the child's immunization program should also be certified. All this should be compulsory prior to admission.

All children entering high school for the first time should have the same type of examination.

Referral examinations to be conducted by the Family Physician to check some suspected deviation from normal health, picked up through screening examinations, teacher observations, nurses' judgments, and school physicians' recommendations.

2. The importance of continuing observations by teachers who understand how children and youth grow and develop and who know the appearance and behavior characteristics of health cannot be overemphasized. Each school should provide opportunities for teachers to improve their observational abilities, using the health resources of the community.

3. Screening tests carried out by teachers, nurses, technicians, and certain volunteers under the instruction and supervision of the school physician to include (a) periodic measurement of height and weight, three yearly at the beginning, middle and end of each school year, the records to be kept on one of the available growth charts to remain a part of the child's accumulative health record; (b) vision tests made with the Snellen chart to be conducted annually, this supplemented by continuous observation of pupils' appearance and behavior; and (c) hearing tests given annually in elementary schools, and every two years in secondary schools, preferably with a pure tone (discrete audiometer).

4. Dental health and dental examinations. Recommendations to be forthcoming from the Arizona Dental Association.

5. Psychological examinations administered by an adequately organized child guidance service are often helpful in evaluating the total health and personality patterns of a child. Medical supervision and psychiatric consultation essential whenever emotional difficulties or mental disease are involved.

6. Health records should be standardized and cumulative from grade to grade and follow the child from school to school as does his scholastic record.

B. Follow-up and Interpretation.

Follow-up requires proper interpretation of health conditions to pupils and parents and to teachers and administrators, and effort to help children secure treatment or other needed attention for health problems, a most important aspect of school health services. It involves utilization of all community resources, a procedure that is facilitated by good communication between school personnel, parents, practitioners of medicine and dentistry, and community agencies.

C. Care of Emergency Sickness or Injury.

Every school should have a planned written program for the care of emergencies. In case of accident or sudden illness the school has responsibility for giving immediate care, for notifying parents, for getting children home or some other place of safety, and for guiding parents, where necessary, to sources of treatment. Everyone on school staff should have the skills and understanding necessary to administer first aid.

All children starting school should have a certificate from their Family Physician that their immunization records are in order and up-to-date as outlined by the American Academy of Pediatrics; that a Mantoux test has been performed, and if positive, that necessary examination including chest X-rays, sputums, if indicated, to insure that the child does not have active tuberculosis.

Booster injections and re-vaccinations should be insisted upon at appropriate intervals and can best be given by the Family Physician.

Specific preventive treatments are best administered by the Family Physician in his office in conjunction with the early supervision of a child's health. Local customs or medical opinion may encourage administration of booster injections in the school or at the health department, but every effort must be made to discourage postponement of primary immunization until school entrance.

Notification of parents and physicians if child is exposed to a contagious disease so that appropriate preventive treatment can be instituted.

While the common cold is an especially difficult communicable disease problem, its vague symptomatology simulates the early manifestations of many more serious diseases, such as

rheumatic fever and pneumonia. Although it is impracticable to exclude from school every pupil who exhibits signs and symptoms of a common cold, parents should be encouraged to keep pupils at home when they exhibit genuine signs or symptoms of a beginning of a severe cold, and they should be excluded from school.

Control of communicable disease in schools is sometimes hampered by placing false emphasis on perfect or near-perfect attendance. Rather than giving certificates or awards for perfect attendance, commendation should be given to pupils who protect the health of their classmates by remaining home when not well. Allotment of state funds to local schools on the basis of the average number of pupils in daily attendance is equally bad practice, because it makes teachers anxious to force attendance on pupils who ought better be at home and in bed.

Contrary to popular beliefs, epidemics occurring in communities having well-organized, efficient public health facilities usually can best be controlled if schools remain open but take special precautions, including regular daily inspections and continuing observations of all children.

It is the hope these recommendations, set forth in more detail in the report, can be approved by the state Medical Association and that in cooperation with the State Advisory Committee on School Health, we can move forward in an attempt to present this program to school administrators and gain their cooperation in facilitating the adoption of a unified program throughout the State. It was further the hope that we participate in the planning of a 3-day workshop program for school administrators to be scheduled in August of this year, at which time they will be oriented in this program.

IT WAS MOVED by Doctor Payne, seconded by Doctor Frissell and unanimously carried that Doctor Smith's report be accepted.

Woman's Auxiliary.

In the absence of Robert E. Hastings, M.D., chairman, Doctor Steen presented the following written report summarizing the results of a survey recently undertaken and completed by the special committee of the members of the Woman's Auxiliary:

"1. College Degree Program of Nursing:

Both the University of Arizona and Arizona State Universities now have a School of Nursing which offers a four-year program leading to a Bachelor of Science in Nursing. After careful consideration of both schools, it was felt that there was a need for loans for deserving girls primarily in their junior and senior years.

2. Medical Technology:

There is also a Medical Technology program offered at both Universities which leads to a Bachelor of Science degree in Medical Technology. If a loan was offered in this field, the committee advised that it be done at the sophomore or junior level as the student works in an approved hospital laboratory his last year and is paid a salary.

3. Practical Nursing:

The S. H. Kress School of Practical Nursing at the Pima County Hospital in Tucson and the Practical Nursing course taught at the Vocational-Technical division of Phoenix Union High School were investigated. The committee did not feel there was enough need at either of these schools for us to consider them.

4. Phoenix College School of Nursing:

This is a new school, having been started in 1959. It is a two-year curriculum qualifying the graduate to take the Arizona State Licensing Examinations for the Registered Nurse (R.N.). Since this is such a new and unproved school the committee felt it would be wise to wait until it is better established before giving it serious consideration.

5. X-Ray Technology:

Curoses in X-Ray Technology are offered at St. Mary's Hospital in Tucson; St. Joseph, Good Samaritan and Memorial in Phoenix. As there is no tuition involved, the committee did not think our help would be of benefit in this field.

6. Occupational Therapy, Physical Therapy, Dietetics, Medical Records and Medical Social Work:

These were all investigated. All graduate work and internships in these fields have to be done out of the State.

Extension of the Student Nurse Loan Fund program to include students in paramedical fields was referred last year to the Woman's Auxiliary by the Board of Directors for investigation and recommendation. This report is presented by Mrs. Hiram Cochran, president of the said Auxiliary, and its committee feels that the excellent work and accomplishments in regard to the Student Nurse Loan Fund for the

past nine years should be continued, but that at this time we might also consider the fitness of including the graduate nursing course definitely, and possibly the medical technology course if finances permit. It is not felt at this point that the Auxiliary is large enough and financially strong enough to commit itself further."

Doctor Hastings advised that his committee feels they ought not to, and that the Auxiliary desires to be so informed.

It was further pointed out that at Arizona State University a two-year nursing school course, affiliated with the Maricopa County General Hospital, Phoenix, has been established with the support of the Maricopa County Medical Society. Question has been raised as to whether or not the Auxiliary program should include such students. It is the general feeling that they should not at this time.

IT WAS MOVED by Doctor Bean, seconded by Doctor Young and unanimously carried that the report of Doctor Hastings be accepted.

It was reported that Dennis Bernstein, M.D., of Tucson, declined acceptance of appointment to membership on this subcommittee.

Lorel A. Stapley, M. D.
Secretary
by ROBERT CARPENTER
Executive Secretary

LETTER TO THE SECRETARY

February 2, 1960

Lorel A. Stapley, M.D.
Secretary
The Arizona Medical Assn., Inc.
1021 Central Towers Bldg.
Phoenix, Arizona
Dear Doctor Stapley:

This is to thank you for your letter of January 26th, in which you reiterated the position taken by the membership of the Arizona Medical Association in opposing the so-called Forand Bill.

It will not receive my support.

I do not favor socialism in any form and believe that this type of legislation can only add to the Federal assessments already imposed on our overburdened taxpayers.

Yours sincerely,
JOHN J. RHODES

LETTER TO THE SECRETARY

February 10, 1960

Dr. Lorel A. Stapley, Secretary
The Arizona Medical Association, Inc.
1021 Central Towers Building
Phoenix, Arizona
Dear Dr. Stapley:

I appreciate your letter of January 26 informing me that the Board of Directors of the Arizona Medical Association, Inc., has again voted to oppose the enactment of H. R. 4700.

Actually, so far as I am concerned, there has been very little action on this legislation since last year in that the House Ways and Means Committee has not processed this bill nor made any report to the House on it.

The best information available here is that action at this session of Congress is unlikely. Judging by my mail, however, the problem of adequate medical care for our retired citizens is a very real and urgent problem and it would seem to me that the best way to head off legislation such as H. R. 4700 would be for the medical profession working closely with the insurance industry to come up with new programs which will meet the needs of these citizens. I hope you people will devote much careful time and creative effort to this challenge in the months ahead.

Sincerely,
STEWART L. UDALL

U. S. SAVINGS BONDS

A new previlege for U. S. Savings Bond savers: if you want your interest by check instead of its being added to the cash values of your E bonds, you can now exchange E's for H's in any amount, and not have to pay income tax on the E bond interest until you cash the H bond.

Topics of Current Medical Intrest

ARIZONA POISONING CONTROL INFORMATION CENTER

SAFETY CLOSURE FOR MEDICINAL CONTAINERS

Accidental poisoning from drugs involving pre-school-aged children is a frequent occurrence. It has been stated that one-third of the deaths from poisoning result from the accidental ingestion of medicinal agents(1). Several reports in the literature testify to the high incidence of poisoning from drugs. A publication by Cann and Associates(1) of the National Clearinghouse for Poison Control reveals that 55% of 3926 cases of poisoning reported by 29 poisoning control centers involved ingestion of medicinal agents.

In the state of Arizona during 1959, 61% of 1154 cases of poisoning reported by the Arizona Poisoning Control Treatment Centers were caused by drugs. The majority of these cases involved children 1 to 5 years of age. Aspirin and other salicylates comprised 25% of the total number of cases, while the remainder involved "over-the-counter" and prescription drug items.

Since most of the cases of accidental poisoning from medicinal agents occur because of improper storage, administration, and disposal of these chemical agents in the home, it is frequently emphasized that public education is the most important means for preventing these accidents. Another preventive measure which deserves more attention is the use of safety closures on containers for packaged and prescribed medications. The adoption of an effective safety closure of some type for all drug containers found in the home has been highly recommended as a measure to reduce the morbidity and mortality from accidental ingestion of potentially dangerous drugs(1, 3).

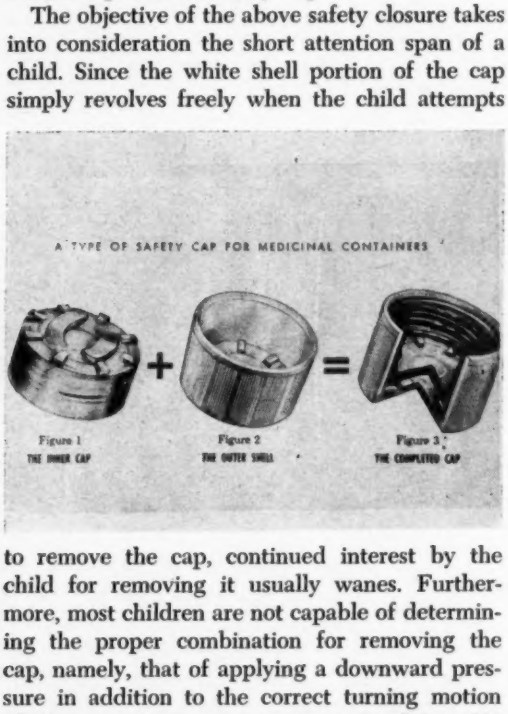
Several ingenious types of safety closures have been described in the literature(1, 4) but most of these have been adapted to packaged aspirin containers. Recently, a novel safety cap designed for liquid as well as for tablet prescription containers has been made commercially available. This safety cap is constructed in 2 pieces. As shown in Fig. 1, it consists of an inner plastic (clear) cap which is threaded to seal the bottle in the conventional manner. Located in the top of this inner cap are 8 fixed plastic locking lugs and 2 elevated plastic prongs which serve as springs. A cardboard sealer disc is positioned inside of the cap which, in this respect, resembles the conventional screw cap. (Cardboard sealer is not visible in figures.)

The second part of the safety cap consists of an outer white plastic shell which fits over the inner plastic cap. Eight locking lugs are located on the inside of this shell (See Fig. 2) and are similar to the lugs found on the inner cap described above. As shown in Fig. 3, when the inner cap and the shell are assembled they appear as one ordinary cap.

When the safety cap is in place on the bottle, the outer shell is free to turn completely around the iner cap without changing the position of the latter on the bottle. To remove the cap, a downward pressure is exerted on it and in so doing the 2 plastic prongs on top of the inner

cap are repressed allowing the locking lugs on both inner cap and outer shell to become engaged. As the downward pressure is applied, the cap is removed with a counter-clockwise motion in the usual manner employed when removing an ordinary screw cap (See Fig. 4). Replacement of the safety cap on the bottle involves the reversal of the above procedure, since the cap is turned in a clockwise direction on the bottle while applying a downward pressure to the cap (See Fig. 5). The directions for removing and replacing the cap are imprinted on the top of each safety cap.

The objective of the above safety closure takes into consideration the short attention span of a child. Since the white shell portion of the cap simply revolves freely when the child attempts



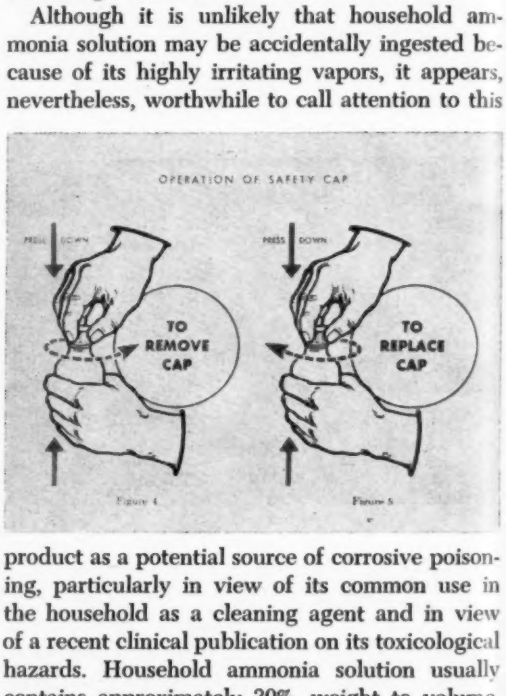
to remove the cap, continued interest by the child for removing it usually wanes. Furthermore, most children are not capable of determining the proper combination for removing the cap, namely, that of applying a downward pressure in addition to the correct turning motion of the cap. A consumer survey involving 449 children in 4 cities in the United States has indicated that a total of 435 children could not open containers equipped with this safety closure(5).

The safety cap described above is manufactured by the Brockway Glass Company, Brockway, Pennsylvania. At present it is available on 3 and 4 ounce clear-glass flint prescription ovals for liquid medication and on both amber and clear-glass 5 dram vials for capsules and tablets. The Brockway Glass Company plans to use the safety cap on their prescription containers of all sizes if this innovation is acceptable to the public(5). The cost of these safety cap containers to the pharmacist is only 25-29% more than the conventional screw cap on the same type bottles. It would appear that the added cost of these containers would be offset immeasurably by the part that they would play in the prevention of accidental poisoning in children.

The Arizona Poisoning Control Information Center has been informed that these safety cap prescription containers are available to pharmacies in Arizona through the usual wholesale drug channels.

Poisoning From Household Ammonia Solution

Although it is unlikely that household ammonia solution may be accidentally ingested because of its highly irritating vapors, it appears, nevertheless, worthwhile to call attention to this



product as a potential source of corrosive poisoning, particularly in view of its common use in the household as a cleaning agent and in view of a recent clinical publication on its toxicological hazards. Household ammonia solution usually contains approximately 30%, weight to volume, of ammonia (NH_3)(6). It is highly alkaline and upon ingestion produces symptoms and local tissue damage similar to those caused by the ingestion of lye. For example, the report mentioned above(7) describes two cases in which household ammonia solution was intentionally ingested in amounts of approximately 240 ml and 200 ml. The patients exhibited bloody vomits and complained of chest pains when they were initially observed at the hospital. Inflammation of the oropharynges was also noted. Later consequences of poisoning by the corrosive included esophageal stricture and gastric stricture, particularly in the region of the antrum. Thus, the Arizona Poisoning Control Information Center

suggests that the ingestion of ammonia solution should be treated in a manner identical to the treatment of lye ingestion, as described in previous APCIC News Bulletins, December 1957 and September 1959 or in *Arizona Medicine*(8, 9) (i.e., dilute the alkaline corrosive with large amounts of water, milk, orange juice, lemon juice, or dilute vinegar; give demulcents; administer analgesics – demerol, 50 to 100 mg i.m.; treat for shock; administer adrenocortical steroids and broad spectrum antibiotics; and avoid emetics or gastric lavage).

Convulsions From Repeated External Application Of Diamthazole (Asterol)

Diamthazole (Asterol) dihydrochloride is an antifungal agent which is effective in the treatment of athlete's foot and other fungus infections of the skin, hair, and nails. It is marketed as a 5% powder, a 5% tincuture, and a 5% ointment. These preparations bear a caution legend and are available only on prescription from a physician. The potential neurotoxicity of diamthazole, especially in infants and very young children, has been recognized for a number of years(10, 11, 12, 13) and the central nervous system symptoms which may result from the percutaneous absorption of the drug are described in New and Nonofficial Drugs(14). These symptoms may include ataxia, tremors, convulsions, hallucinations and behavior changes. Because of the possible consequences which may arise from the application of diamthazole on children, it is suggested that this drug should not be used on infants or persons under six years of age and that it should be employed cautiously in the treatment of individuals 6 to 12 years old(15). The above warning is supplied with each container of the medication, but the warning is not arranged for convenient routine transfer to the patient. Hence, patients or parents are unlikely to be uninformed by the pharmacist of the cautionary measures in the use of this agent in children unless he knows that the patient is very young. Recently, Morton(16) reported a case in which a physician treated a 4-week-old girl for ringworm. Diamthazole was applied three times daily to the face, scalp, and body of the infant. After one week of such treatment the patient exhibited convulsions which were controlled with paraldehyde and barbiturates. It is the opinion of Dr. Morton that this incident might have been avoided had the child's age appeared on the prescription, since the pharmacist would then serve as an additional safeguard. She enjoins fellow pediatricians to encourage their colleagues in other fields to include the age of their child patients on prescriptions for medication.

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STATISTICS OF 61 POISONING CASES IN ARIZONA DURING JANUARY 1960

AGE:		
69.0%	involved under 5 year age group	(42)
1.6%	involved 6 to 15 year age group	(1)
16.3%	involved 16 to 30 year age group	(10)
4.9%	involved 31 to 45 year age group	(3)
4.9%	involved over 45 year age group	(3)
3.3%	age not reported	(2)
NATURE OF INCIDENT:		
82.0%	accidental	(50)
18.0%	intentional	(11)
OUTCOME:		
100.0%	recovery	(61)
0.0%	fatal	(0)
TIME OF DAY:		
39.4%	occurred between 6 a.m. and noon	(24)
26.2%	occurred between noon and 6 p.m.	(16)
13.1%	occurred between 6 p.m. and midnight	(8)
3.3%	occurred between midnight and 6 a.m.	(2)
18.0	time of day not reported	(11)

CAUSATIVE AGENTS:

Internal Medicines	Number	Percent
Aspirin	16	26.2
Other Analgesics	3	4.9
Barbiturates	10	16.4
Antihistamines	3	4.9
Laxatives	4	6.6
Cough Medicine	2	3.3
Tranquilizers	0	0.0
Others	7	11.5
Subtotal	45	73.8
External Medicines	0	0.0
Household Preparations		
Soaps, Detergents, etc.	0	0.0
Disinfectants	3	4.9
Bleach	2	3.3
Lye, corrosives, drain cleaners	2	3.3
Furniture and floor polish	0	0.0
Subtotal	7	11.5
Petroleum Distillates		
Kerosene	1	1.6
Gasoline	0	0.0
Others	0	0.0
Subtotal	1	1.6
Cosmetics		
Pesticides		
Insecticides	1	1.6
Rodenticides	0	0.0
Others	0	0.0
Subtotal	1	1.6
Paints, Varnishes, Solvents, etc.	1	1.6
Plants	0	0.0
Miscellaneous	4	6.6
TOTAL	61	100.0

STATISTICS OF 1154 POISONING CASES REPORTED IN ARIZONA DURING THE YEAR JANUARY 1 - DECEMBER 31, 1959

AGE:

72.8% involved under 5 year age group	(850)
3.6% involved 6 to 15 year age group	(42)
8.4% involved 16 to 30 year age group	(97)
5.6% involved 31 to 45 year age group	(65)
5.5% involved over 45 year age group	(64)
3.9% were not reported	(46)

NATURE OF INCIDENT:

86.8% accidental	(1002)
13.0% intentional	(150)
0.2% were not reported	(2)

TIME OF DAY:

31.3% occurred between 6 a.m. and noon	(362)
33.1% occurred between noon and 6 p.m.	(382)
19.4% occurred between 6 p.m. and midnight	(224)
2.9% occurred between midnight and 6 a.m.	(34)
13.2% were not reported	(152)

OUTCOME:

99.2% recovery	(1145)
0.6% fatal	(7)
0.2% were not reported	(2)

CAUSATIVE AGENTS:

Internal Medicines	Number	Percent
Aspirin	291	24.9
Other Analgesics	33	2.8
Barbiturates	133	11.4
Antihistamines	31	2.7
Laxatives	26	2.2
Cough Medicine	11	1.0
Tranquilizers	42	3.6
Others	104	8.9
Subtotal	671	57.5
External Medicines		
Liniment	10	0.9
Antiseptics	21	1.8
Others	6	0.5
Subtotal	37	3.2
Household Preparations		
Soaps, Detergents, etc.	14	1.2
Disinfectants	13	1.1
Bleach	22	1.9
Lye, corrosives, drain cleaners	29	2.5
Furniture and floor polish	15	1.3
Subtotal	93	8.0
Petroleum Distillates		
Kerosene	29	2.5
Gasoline	27	2.3
Others	23	2.0
Subtotal	79	6.8
Cosmetics		
Pesticides		
Insecticides	63	5.4
Rodenticides	2	0.17
Others	8	0.69
Subtotal	73	6.3
Paints, Varnishes, Solvents, etc.	46	3.9
Plants	36	3.1
Miscellaneous	77	6.6
Unspecified	27	2.3
TOTAL	1165*	100.0

*The total number of causative agents exceeds the actual number of poisoning cases since in certain individual poisoning incidents more than one agent was involved.

WILLIS R. BREWER, Ph.D.
Dean, College of Pharmacy
The University of Arizona
ALBERT L. PICCHIONI, Ph.D.
Pharmacologist and Director
Arizona Poisoning Control Program
LINCOLN CHIN, Ph.D.
Pharmacologist

BOARD OF MEDICAL EXAMINERS

The Board of Medical Examiners of the State of Arizona at a regular meeting held Saturday, January 16, 1960, issued certificates to practice medicine and surgery in this state to the follow-

ing doctors of medicine:

Abbott, James Allen (P), 1012 Kales Building, Detroit 26, Michigan

Barrier, Jr., Charles Wesley (N), 2409 East Adams, Tucson, Arizona

Bernasconi, Ezio Joseph (Oph), 726 Broad Street, Providence 7, Rhode Island

Bethune, Donald Stimson (ObG), 421 Huguenot Street, New Rochelle, New York

Branin, Howard Scull (PH), Maricopa County Health Department, Phoenix, Arizona

Bryan, Robert James (GP), 1002 Lincoln Way West, South Bend, Indiana

Di Censo, Sabatino (GP), 212 N. Avenue, Los Angeles 42, California

Dulawa, Leopoldo Benigno (GP), 350 West Thomas Road, Phoenix, Arizona

Escobar, Hugo Rene (GP), 350 West Thomas Road, Phoenix, Arizona

Galt, Jabez (I), 510 Medical Arts Building, Dallas, Texas

Gerber, Edward Paul (Oph), USPH Indian Hospital, Fort Defiance, Arizona

Gerster, Josef Jacob (I), 3131 North 7th Avenue, Phoenix, Arizona

Gorton, Bernard Emmanuel (PN), Papago Medical Building, Scottsdale and McDowell Roads, Scottsdale, Arizona

Grossnickle, James Walter (GS), Rt. 2, Box 949, Winter Haven, Florida

Henrie, Joyce Elaine Rich (P), 1809 North 11th Avenue, Phoenix, Arizona

Hernried, Hans Peter (I), 31 West Camelback Road, Phoenix, Arizona

Hernried, Lucy Steinbach (A), 31 West Camelback Road, Phoenix, Arizona

Hughet, Keith Robert (Ind), 116 North Tucson Blvd., Tucson, Arizona

Jackson, Jr., Ralph Allen (I), 2065 Adelbert Road, Cleveland 6, Ohio

Jessen, Barbara Green (GP), 691 Salvatierra Street, Stanford, California

Kartchner, Mark M. (S), Indian Hills Service Hospital, Lawton, Oklahoma

Klipfel, Gerda E. (ObG), Maricopa County Hospital, Phoenix, Arizona

La Dage, Leo Henry (P1-MaxS), 919 Pine Avenue, Long Beach 13, California

Marks, Jack Armin (P), 2500 East Van Buren, Phoenix, Arizona

Merkel, Richard Lawrence (ObG), 302 National Reserve Building, Topeka, Kansas

Miller, Jr., Alfred Frederick (Or), 461 West Catalina Drive, Phoenix, Arizona

Oakes, Harold Forest (GP), 22443 Welby Way, Canoga Park, California

Orth, John Stambaugh (Anes), USAF Hospital, Carswell AFB, Fort Worth, Texas

Pearson, Murble Henry (GS), San Antonio State Hospital, San Antonio, Texas

Rawson, Robert Davis (GS), 711 N. Country Club Road, Tucson, Arizona

Shaul, Jr., Arthur B. (R), Ashtabula General Hospital, Ashtabula, Ohio

Silverman, Jerome L. (GP-I), 2430 Cass Avenue, Tucson 15, Arizona

Tolone, Francesco Saverio (R), 2021 North Central Avenue, Phoenix, Arizona

Veit, Henry (P), 5836 W. Lisbon Avenue, Milwaukee 22, Wisconsin

Waltz, Paul Jones (GP), West Branch, Michigan

THE BEHAVIOR OF TUMORS IMPLANTED IN THE MOUSE TREATED WITH EXTRACTS FROM HIGHER PLANTS

The following is a brief abstract of one of the projects of medical interest being done at the University of Arizona in Tucson.

This project involves collection, extraction by aqueous and organic solvents processes, and submission of semi-solid and lyophilized extracts to the Cancer Chemotherapy National Service Center for screening against sarcoma, carcinoma and leukemia in mise. Active extracts are subjected to fractionation, isolation, re-evaluation, analysis and synthesis studies.

Sources of plants are the southwestern area of the United States and northern and central Mexico, and they are derived from a range of growing conditions varying from alpine to Sonoran desert and subtropical environments. Some data have been collected on the use of some of these plants employed by physicians and lay persons for cancer therapy and other medicinal purposes. To date 810 extracts obtaindef rom 450 different species of plants distributed among 90 families have been submitted. An attempt is being made to determine whether or not there is any correlation between certain families of plants and tumor inhibition.

Extracts which have passed enough of the

sequences of antitumor tests to be labelled "active" and, therefore, to be considered worthy of analytical investigation are few in number, but sufficient to be encouraging. In several instances, these extracts do represent plant materials employed by the native peoples of the Southwestern United States and of Mexico for many generations. Such extracts are to be fractionated and isolates prepared for chemical analysis and further studies aimed at synthesis of chemotherapeutic products for cancer.

Support of this work carried on in the Pharmacy College at the University of Arizona has come from many contributors. The chief source of funds has been The University of Arizona followed by the Arizona Division of the American Cancer Society, an anonymous donor, the Upjohn Pharmaceutical Company, and The University of Arizona Alumni Association.

MARY E. CALDWELL, Ph.D.
Research Pharmacologist
The University of Arizona
College of Pharmacy

Reprints

"THE RELATIVE VALUE SCALE"

Louis S. Wegryn, M.D.

The following is a condensation of the many sound and logical reasons why ethical physicians should determinedly and vigorously oppose the Relative Value Scale: *Relative Value Scale* will lead to (actually is, as soon as a conversion factor is applied) *fixed fees; it implies regimentation which denies freedom.* The *Scale denies the right of each physician to establish his own fee schedule.* The *Relative Value Scale* amounts to a *self-imposed regimentation* of physicians.

Relative Value Scale implies that all physicians are standardized – that all doctors are the same and none is better than the next. It would imply ridiculously that *all illness is standardized,* contrary to the traditional and undisputed principle that every case, every patient is singular; that his problem and the doctor's care is individual. *A patient or a disease is not a relative value. The Scale would give the enemies of medicine a weapon* by which freedom of medical care would be destroyed. It would *divide doctors into two classes*: Those charging above the scale and those below. Physicians would be stigmatized with being either inferior or superior and/or being "cheap" or a "fee gouger."

The *Scale would give to labor bosses,* government agencies, and other third parties, *a powerful weapon* which inevitably would be used by them to "bargain down" (never up) physicians' fees. This would be contrary to the ethics of medical practice because *physicians are morally bound to deal with the individual patient* and not bargain their services with third parties. Realistically, the Scale means that the "collective" is to tell every doctor what his services are worth. The *physician would be lead to shirk his responsibility* to state his value of his services. The *Relative Value Scale would cause conformity* which, unquestionably, would lead to *professional mediocrity.* This *dangerous device* for fixing fees would level physicians – the good and the bad – *to a plane of ordinary professional capacity.*

When the proponents of the Relative Value Scale vigorously proclaim that it is not a mechanism for fixing fees, the logical question should be: "Then, *what is the device for?*" There is utterly *no logical reason for assigning a "relative value" to almost every procedure* known in the practice of medicine. *Neither is there any public interest served. Standardizing* doctors, patients, diseases and treatments *will lead to the destruction of the system of private practice* that has provided the American people with the highest quality of medical care in the world, will demoralize medical public relations, deplorably weaken the initiative and professional excellence of physicians, and *cut a path to the slave state of socialism* where all will be doomed to suffer ignominiously.

Sincerely,
LOUIS S. WEGRYN, M.D.
President, AAPS.

*Editor's Note: The above reproduction is for information and does not necessarily express the opinion of the Editorial Board.

Future Medical Meetings and Postgraduate Education

ARIZONA MEDICAL ASSOCIATION, INC.

SCOTTSDALE **MAY 4, 5, 6, 7, 1960**

69TH ANNUAL MEETING PROGRAM
THE ARIZONA MEDICAL ASSOCIATION, INC.

May 4, 5, 6, and 7, 1960

The Safari Hotel, Scottsdale, Arizona

WEDNESDAY, May 4th

8:00 A.M.	Board of Directors Meeting	The Kudu Room
12:00 Noon	Board of Directors Luncheon	The Garden Room
2:00 P.M.	House of Delegates, First Meeting	Convention Hall
4:00 P.M.	Reference Committee Meetings	Conference Room
6:30 P.M.	Reception	Pool Patio
7:30 P.M.	Chuckwagon Dinner	Pool Patio

THURSDAY, May 5th 1960

8:00 A.M.	FIRST SCIENTIFIC SESSION John R. Schwartzmann, M.D., General Chairman Breakfast Seminar, "Whiplash Injuries." Moderator: John R. Schwartzmann, M.D. Panel: John A. Eisenbeiss, M.D., Richard E. McGovern, M.D., Mr. Robert F. Miller, Edwin R. Schottstaedt, M.D., Louis Jolyon West, M.D.	Main Dining Room
9:30 A.M.	Intermission	Exhibit Tent
10:00 A.M.	Staphylococcal Infections in Childhood Harry Shwachman, M.D., Boston Moderator: Richard B. Johns, M.D. Discussants: Walter E. Ahrens, M.D., John S. Kruglick, M.D.	Convention Hall
10:30 A.M.	OPENING EXERCISES Call to Order: Dermont W. Melick, M.D. Invocation: Dean George Selway, Trinity Cathedral, Phoenix Welcome: W. Albert Brewer, M.D., President, Maricopa County Medical Society Response: Walter Brazie, M.D., President, Mohave County Medical Society Memorial Service: Dean Selway Introduction of the President Presidential Address: Lindsay E. Beaton, M. D. Presentation of the Honorable Paul Fannin, Governor of the State of Arizona	Convention Hall

11:00 A.M.	Regional Anesthesia Combined with Intramuscular Sodium Pentothal for the Pediatric Orthopedic Patient Kenneth K. Keown, M.D., Columbia, Mo. Moderator: Richard B. Johns, M.D. Discussants: Ray Fife, M.D., Wallace A. Reed, M.D.	Convention Hall
11:30 A.M.	Intermission	Exhibit Tent
11:45 A.M.	Respiratory Allergy In Children Orval R. Withers, M.D., Kansas City, Mo. Moderator: Robert E. Hastings, M.D. Discussants: Howard M. Purcell, Jr., M.D., Hugh C. Thompson, M.D.	Convention Hall
12:15 A.M.	(To be announced) Edwin R. Schottstaedt, M.D., San Francisco Moderator: Robert E. Hastings, M.D. Discussants: Willard V. Ergenbright, M.D., Zenas B. Noon, M.D.	Convention Hall
1:00 P.M.	SPECIALTY SOCIETY LUNCHEONS *Open to all registrants*	
	Arizona Chapter of the American College of Chest Physicians Hereditary Hemorrhagic Telangiectasia and Pulmonary Arteriovenous Fistula Corrin H. Hodgson, M.D., Rochester, Minnesota Physiological Aspects of Cardiac Surgery Dwight C. McGoon, M.D., Rochester, Minnesota	Convention Hall
	Arizona Pediatric Society The Problem of Malnutrition in Children Harry Schwachman, M.D., Boston, Massacusetts	Garden Room
3:00 P.M.	BLUE SHIELD ANNUAL CORPORATION MEETING	Convention Hall
4:30 P. M.	REFERENCE COMMITTEE MEETINGS (on call) SPECIALTY SOCIETY BANQUETS *Open to all registrants*	Conference Room
5:00 P.M.	Western Reserve Alumni Association Cocktails and Business Meeting	Pool Patio
7:30 P. M.	Arizona Academy of General Practice Louis Jolyon West, Oklahoma City	Convention Hall
	Arizona Society of Anesthesiologists Kenneth K. Keown, M.D., Columbia, Mo.	Kudu Room
	Arizona Chapter, Western Orthopedic Association Edwin R. Schottstaedt, M.D., San Francisco	
	FRIDAY, May 6th	
8:00 A.M.	SECOND SCIENTIFIC SESSION Leslie B. Smith, M.D., General Chairman	
8:00 A.M.	Breakfast Seminar: Hypnosis in Surgery and Obstetrics Moderator: Louis Jolyon West, M.D., Oklahoma City Panel: Max Costin, M.D., William J. Dignam, M.D., Kenneth K. Keown, M.D., Fred H. Landeen, M.D., Dwight C. McGoon, M.D., Edwin R. Schottstaedt, M.D.	Main Dining Room
9:00 A.M.	Intermission	Exhibit Tent

9:30 A.M.	Narcotic Addiction from the Point of View of a Law Enforcement Officer Col. George H. White, San Francisco Response: Narcotic Addiction, A Medical Problem Otto L. Bendheim, M.D., Phoenix Moderator: T. Richard Gregory, M.D. Discussants: Sgt. William E. Dunn, Warren S. Williams, M.D.	Convention Hall
10:10 A.M.	(To be announced) Louis J. West, M.D., Oklahoma City Moderator: T. Richard Gregory, M.D. Discussants: Richard E. H. Duisberg, M.D., Frank A. Shallenberger, Jr., M.D.	Convention Hall
10:40 A.M.	Recent Progress in Psychopharmacology Carlo Henze, M.D., Hanover, N. J. Moderator: Arthur V. Dudley, Jr., M.D. Discussants: William B. McGrath, M.D., Paul J. Slosser, M.D.	Convention Hall
11:10 A.M.	Intermission	Exhibit Tent
11:25 A.M.	Association's First Prize Award Paper Chairman: Arthur V. Dudley, Jr., M.D.	Convention Hall
11:45 A.M.	Symposium: Psychiatry in General Practice and the Specialties Moderator: Louis Jolyon West, M.D. Panel: William J. Digman, M.D., James L. Grobe, M.D., Corrin H. Hodgson, M.D., Edwin R. Schottstaedt, M.D., Harry Shwachman, M.D., Orval R. Withers, M.D.	Convention Hall
1:00 P.M.	SPECIALTY SOCIETY LUNCHEONS *Open to all Registrants*	
	Joint Meetings: Arizona Chapter, American College of Surgeons & Southwestern Obstetrical and Gynecological Society The Usefulness of Culdoscopy in Gynecologic Diagnosis William J. Dignam, M.D., San Francisco	Convention Hall
	Arizona Society of Allergy Orval R. Withers, M.D., Kansas City, Mo.	Kudu Room
	Arizona Society of Pathologists The Problem of Transfusion Hepatitis John B. Alsever, M.D., Phoenix	Garden Room
3:00 P.M.	HOUSE OF DELEGATES, SECOND MEETING	Convention Hall
7:00 P.M.	PRESIDENT'S RECEPTION	Pool Patio
8:00 P.M.	DINNER DANCE	Convention Hall
	SATURDAY, May 8th	
9:00 A.M.	THIRD SCIENTIFIC SESSION Ian M. Chesser, M.D., General Chairman	
9 A.M.	The Recognition and Treatment of Heart Failure in the Operating Room Kenneth K. Keown, M.D., Columbia, Mo. Moderator: W. R. Manning, M.D. Discussants: Samuel J. Grauman, M.D., Morris E. Stern, M.D.	Convention Hall

9:30 A.M.	Indications for Office Gynecologic Procedures of a Surgical Nature William J. Dignam, M.D., San Francisco Moderator: W. R. Manning, M.D. Discussants: Ivan W. Kazan, M.D., Roy O. Young, M.D.	Convention Hall
10:00 A.M.	Serotonin and the Carcinoid Syndrome Carlo Henze, M.D., Hanover, N. J. Moderator: W. R. Manning, M.D. Discussants: Richard L. Dexter, M.D., Jules L. Whitehill, M.D.	Convention Hall
10:30 A.M.	Intermission	Exhibit Tent
10:45 A.M.	The Solitary Circumscribed Pulmonary Nodule Corrin H. Hodgson, M.D., Rochester, Minn. Moderator: James D. Barger, M.D. Discussants: O. J. Farness, M.D., Dermont W. Melick, M.D.	Convention Hall
11:15 A.M.	Transfusion Therapy in the Emergency Treatment of Secondary Shock John B. Alsever, M.D., Phoenix Moderator: James D. Barger, M.D. Discussants: Kenneth E. Johnson, M.D., Charles A. L. Stephens, M.D.	Convention Hall
11:45 A.M.	Cardiac Septal Defects Dwight C. McGoon, M.D., Rochester, Minn. Moderator: James D. Barger, M.D. Discussants: Earl J. Baker, M.D., Hugh B. Hull, Jr., M.D.	Convention Hall
1:00 P.M.	ANNUAL HANDICAP GOLF TOURNAMENT	Scottsdale Country Club
7:00 P.M.	GOLFERS BANQUET. For tournament participants and their wives. C. Thomas Read, M.D., Golf Committee Chairman, presiding.	Scottsdale Country Club

LIST OF GUEST SPEAKERS AND TITLES

John B. Alsever, M.D., Medical Director, Southwest Blood Banks, Phoenix, Arizona.

William J. Dignam, M.D., Assistant Professor of Obstetrics and Gynecology, University of California, at Los Angeles.

Carlo Henze, M.D., Medical Director, Sandoz Pharmaceuticals, Hanover, New Jersey.

Corrin H. Hodgson, M.D., Asst. Professor of Medicine, Mayo Foundation, University of Minnesota.

Kenneth K. Keown, M.D., Professor of Anesthesiology, University of Missouri Medical School.

Dwight C. McGoon, M.D., Chief, Cardiac Surgical Section, Mayo Clinic, Rochester, Minn.

E. R. Schottstaedt, M.D., Associate Clinical Professor of Orthopedic Surgery, Univ. of California.

Harry Schwachman, M.D., Associate Clinical Professor of Pediatrics, The Children's Medical Center, Boston, Massachusetts.

Lewis Jolyon West, Professor of Psychiatry, University Medical Center, Oklahoma City, Oklahoma.

Col. George H. White, Director Supervisor, Bureau of Narcotics, San Francisco, California.

Orval R. Withers, M.D., Associate Clinical Professor of Medicine, University of Kansas Medical School.

JOHN B. ALSEVER, M.D.

1. Syracuse University – AB, 1930
2. Harvard Medical School – M.D., 1934
3. Medical Internship and Residency Training – Peter Bent Brigham Hospital, Boston, Massachusetts, 1934-37.
4. Private Practice, Internal Medicine, Syracuse, New York, 1937-1942; Instructor in Medicine, Syracuse University Medical School; Assistant in Medicine, Syracuse University Hospital; Assistant in Medicine, Syracuse Memorial Hospital; Member of Cardiac Clinic, Out-patient Clinic.
5. Organized and directed Syracuse University Medical Center Blood Transfusion Service; research in blood banking, blood and plasma preservation, 1938-1942.
6. Medical Officer, U. S. Public Health Service, 1942-1945.
7. Medical Director, Southwest Blood Banks, Incorporated, Phoenix, Arizona, 1955 to present.
8. Consultant for Blood Program, FCDA, 1955 to present.
9. Other current positions: Secretary, American Association of Blood Banks; President, South Central Association of Blood Banks; Member, Standards Committee, American Association of Blood Banks.
10. Certified by American Board of Internal Medicine, 1941.
11. Professional Societies: Nu Sigma Nu, Sigma Xi, American Medical Association, Arizona Medical Association, Maricopa County Medical Society, Fellow, American College of Physicians, American Association of Blood Banks, South Central Association of Blood Banks, California Blood Bank Association, American Society of Clinical Pathologists, Association of Military Surgeons, Phoenix Society of Pathologists.

WILLIAM J. DIGNAM, M.D.

Born: Manchester, New Hampshire, August 11, 1920.

Graduated: Nashua High School, Nashua, New Hampshire, 1937.

AB Dartmouth College, Hanover, New Hampshire, 1941.

MD Harvard Medical School, Boston, Mass., 1943.

Intern: Boston City Hospital, Boston, Mass., 1944.

U.S. Navy: Medical Officer, Seabee Battalion, 1945-1946.

Resident: Obstetrics-Gynecology, University of Kansas, Medical Center, Kansas City, Missouri, 1947-1950.

Resident: Endocrinology, Duke University, Durham, North Carolina, 1948.

Instructor: Obstetrics-Gynecology, University of California Medical School, San Francisco, California, 1951-1953.

Assistant Professor: Obstetrics-Gynecology, University of California Medical School, Los Angeles, Calif., 1953-present (1959).

Associate Professor: University of California Medical School, Los Angeles, Calif., 1959-present.

CARLO HENZE, M.D.

Born on island in the Bay of Naples in 1907 of Austrian and British parentage. Attended elementary and high school in Switzerland and Austria. Medical education at the Medical Schools of Innsbruck, Vienna and Munich. M.D. Innsbruck 1933. 1934 to 1938 instructor and assistant professor department of pharmacology, University of Innsbruck School of Medicine. Author and co-author of several papers dealing with cardiovascular problems. Basic work together with A. Jarisch on afferent reflexes from the heart (Jarisch-Bezold reflex). 1938 resigned from University as a result of Austrian "Anschluss" to Germany. Accepted position as medical consultant with Sandoz Ltd. in Switzerland. Transferred to Sandoz Inc. USA in 1939 to organize and set up Medical Department. 1941 to 1945 Medical Corps Army U.S. Served as a Medical officer at Walter Reed Hospital and the Office of the Surgeon General in Washington. 1944 European Theater of Operations on special mission for War Department in England, France and Germany. Awarded the Legion of Merit for exceptionally meritorious service. Mustered out of service in late 1945 and returned to Sandoz. 1948 Manager Pharmaceutical Division and Medical Director. 1950 Vice-president. Member New York Academy of Science, American Society for Clinical Research and APMA. Speaks five languages fluently. Hobbies are mountain climbing, skiing and gardening, plays the cello.

CORRIN H. HODGSON, M.D.

B.S., M.D., M.S. (Med.), F.A.C.P., F.C.C.P. Graduate of the University of Minnesota Medical School, Fellow in Medicine, Mayo Foundation; Private Practice in Fergus Falls, Minnesota, and Lima, Peru. Since 1944, Consultant in Internal Medicine of the Mayo Clinic and members of a section of medicine concerned with diseases of the chest. Associate Professor of Medicine, Mayo Foundation, Graduate School, University of Minnesota.

KENNETH K. KEOWN, M.D.

Born May 25, 1917 in Independence, Missouri. The son of Charles Keown, M.D. and Dibyl E. Richards Keown. Attended the first grade through high school in the public schools of Independence. Graduated from Graceland College, Lamoni, Iowa in 1937. Attended Hahnemann Medical College and Hospital of Philadelphia, Pennsylvania. Received my M.D. in June 1941. Interned at Huron Road Hospital, Cleveland, Ohio, 1941-1942. Medical Corps, Army of United States, 1942-1946. Served as Battalion and Regimental Surgeon in Europe.

Residency — Anesthesiology at Hahnemann, Doctor Henry Ruth, Chief of Service, 1946-1948.

Joined staff at Hahnemann, 1948, remained as Associate Professor of Anesthesiology until 1957.

Professor of Anesthesiology, School of Medicine, of the University of Missouri from 1957 to present time.

Member of Boone County Medical Society, Missouri State Medical Association, Missouri Society of Anesthesiologists, American Medical Association (Assistant Secretary of Section on Anesthesiology), American Society of Anesthesiologists, (First vice-president currently), American College of Anesthesiologists, (Vice-chairman Board of Governors), American Society for the Advancement of Science, and Rotary International.

Author of monograph "Anesthesia for Surgery of the Heart," many articles on Anesthesiology applicable to Thoracic and Cardiovascular Anesthesia.

DWIGHT C. McGOON, M.D.

Birthplace and date: Marengo, Iowa, March 24, 1925.

Education: Hampton High School, Hampton, Iowa; Iowa State College, Ames, Iowa; St. Ambrose College, Davenport, Iowa.

M.D. Johns Hopkins University, Baltimore, Maryland — 1948.

I completed a six-year training program in surgery at the Johns Hopkins Hospital in 1954 in the department of Dr. Alfred Blalock. The last year I was in the capacity of Chief Resident.

Following the completion of this training program I was a Captain in the United States Air Force and acted in the capacity of Chief Surgical Consultant to the Air Force in Europe from 1954 to 1956.

I became a consultant in General Surgery at the Mayo Clinic in 1957.

Member of the following Societies and Associations:

American Board of General Surgery
American Board of Thoracic Surgery
American Medical Association
American College of Surgeons
American Association for Thoracic Surgery
Western Surgical Association
Society of Medical Consultants to the Armed Forces
Minnesota State Medical Association
Minnesota Surgical Society

HARRY SCHWACHMAN, M.D.

Born March 19, 1910, Boston, Massachusetts.

1932 B.S. Massachusetts Institute of Technology
1936 M.D. Johns Hopkins Medical School
1936-37 Interneship in Pediatrics, Johns Hopkins Hospital
1937-41 Interneship and Residency in Pediatrics, Children's and Infants' Hospital, Boston
1939-47 Assistant in Pediatrics, Harvard Medical School
1941-42 Fellow in Pathology, Harvard Medical School at The Children's Hospital
1941 Fulfiled Specialty Requirements, American Board of Pediatrics
1942-46 U. S. Army
1944-46 Chief of Laboratory, Rodriguez General Hospital, San Juan, Puerto Rico
1946 Chief, Division of Clinical Laboratories, The Children's Medical Center
1947-48 Instructor in Pediatrics, Harvard Medical School
1947 Chief, Chronic Nutrition Clinic, The Children's Medical Center
1947 Physician, The Children's Medical Center
1947 Consultant, Tumor Therapy, The Children's Medical Center
1947 Secretary-Treasurer, New England Pediatric Society
1948-51 Associate in Pediatrics, Harvard Medical School
1950 Consultant in Pediatrics, U. S. Navy, Pediatric Unit, Chelsea
1951 Assistant Professor in Pediatrics, Harvard Medical School at The Children's Medical Center
1951 First Mead Johnson Award
1956 Chairman, Medical Education Committee, National Cystic Fibrosis Research Foundation
1957 Associate Clinical Professor of Pediatrics, Harvard Medical School
1958 Fellow, American Pediatric Society
1959 Consultant in Pediatrics, Woonsocket General Hospital, Woonsocket, R.I.

EDWIN R. SCHOTTSTAEDT, M.D.

Graduate of the University of Michigan.

Certified by American Board of Orthopaedic Surgeons 1947.

Chief Surgeon Shrine Hospital, San Francisco Unit.

Associate Clinical Professor in Orthopaedic Surgery, University of California School of Medicine.

Medical Director of May T. Morrison Rehabilitation Center.

Attending Staff Children's Hospital.

Attending Staff University of California Hospital.

Active Staff Franklin Hospital.

Member of: American Academy of Orthopaedic Surgeons, American Orthopaedic Association, Fellow of American College of Surgeons, Western Orthopaedic Association, California Medical Association.

LOUIS JOLYON WEST, M.D.

Born in New York City, Dr. West received his early education in Madison, Wisconsin and Iowa City, Iowa. He received his M.D. degree from the University of Minnesota in 1949. His academic appointments include that of Assistant in Psychiatry, Cornell University Medical College, 1950-1952, and Professor and Head, Department of Psychiatry, Neurology and Behavioral Sciences, University of Oklahoma School of Medicine, 1954 to the present.

Other current appointments: Chief Consultant in Psychiatry, Oklahoma City Veterans' Administration Hospital; Research Coordinator, Oklahoma Alcoholism Association; Chief, Behavioral Sciences, Oklahoma Medical Research Foundation; Consultant in Psychiatry, USAF Hospital, Tinker AFB, Okla.; Advisory Council, Behavioral Sciences Division, Air Force Office of Scientific Research; Committee on Research, American Psychiatric Association; National Consultant in Psychiatry to The Surgeon General, United States Air Force; Advisory Editor, The International Journal of Clinical and Experimental Hypnosis; Committee on Hypnosis, Council on Mental Health of the American Medical Association; and Professional Advisory Committee, National Association for Mental Health.

Dr. West served as Chief, Psychiatry Service, USAF Hospital, Lackland AFB, San Antonio, Texas, 1952-1956. He is a Diplomate, National Board of Medical Examiners, and is certified in Psychiatry by the American Board of Psychiatry and Neurology (1954). Dr. West holds memberships in numerous national, regional and state societies of his chosen specialty and is the author of various articles having been published and additional articles, books and monographs ready for publication.

COL. GEORGE H. WHITE

Has been a member of the Federal Bureau of Narcotics for more than 25 years. He served in Europe and the Middle East, as well as in almost every state of the United States. He holds the Treasury Medal for exceptional service for wiping out narcotic rings in the Middle East and Europe when he worked as a special undercover agent there.

During World War II he served in the Office of Strategic Services.

Some of his most sensational cases have involved investigations and raids in San Francisco and the Bay Area. He is presently District Supervisor of the States of California, Nevada and Arizona.

He was born in Los Angeles and attended Alhambra High School and Oregon State College before starting his career in the field of narcotics law enforcement.

ORVAL R. WITHERS, M.D.

M.D., Northwestern University, 1926; Fellow, American College of Allergists; Fellow, American College of Physicians; Associate Professor of Clinical Medicine, University of Kansas Medical School, Kansas City, Kansas; Staff, University of Kansas Hospital, Kansas City, Kansas, St. Mary's Hospital and Baptist Hospital, ansas City, Missouri; Consultant in Medicine (Allergy), Veterans Administration Hospital.

WOMAN'S AUXILIARY

The woman's Auxiliary of the Arizona Medical Association will hold its annual meeting in the Safari Hotel concurrently with the Association's annual meeting. Registration for the Woman's Auxiliary will be in the lobby of the Safari Hotel.

HOBBY SHOW

The Woman's Auxiliary to The Arizona Medical Association announces its Hobby Show to be conducted during the 69th Annual Meeting, May 4-7. Mrs. William Butcher has been appointed chairman.

The show was well received last year, and plans are being made to expand it this year. Subjects and categories to be judged are photography, painting and crafts of all types (ceramics, woodworking, leathercraft, needlework, etc.)

Bring or send entries by Wednesday, May 4, if possible. Deadline Thursday morning, May 5.

Awards to winners will be presented at banquet, Friday evening, May 6.

SPECIAL A.M.E.F. BENEFIT STYLE SHOW

Mrs. Hiram Cochran, president of the Woman's Auxiliary, promises a new kind of style show (consisting of one person) to be presented throughout the Arizona Medical Association's 69th Annual Meeting, May 4-7, and culminating in a unique (to say the least) finale at the Friday evening banquet.

Watch for the model!

AN INVITATION TO THE ANNUAL MEETING OF THE ARIZONA TUBERCULOSIS & HEALTH ASSOCIATION AND THE ARIZONA TRUDEAU SOCIETY

April 23 & 24, 1960 – Ramada Inn, Phoenix

ATTENTION – ALL DOCTORS

Sunday, April 24, 1960

8:00 A.M. Breakfast ($1.50 per person) Business Meeting

PROGRAM Lloyd K. Swasey, M.D. Presiding (A question period is included after each paper).

9:00 A.M. "Practical Aspects of Pulmonary Function Studies"
Ulrich C. Luft, M.D., Chief, Department of Physiology, Lovelace Foundation, Albuquerque

10:00 A.M. "Unusual Diseases of the Lungs"
James A. Weir, M.D., Colonel, U. S. Army Medical Chorps, Chief, Pulmonary Disease Section, Fitzimmons Army Hospital, Denver

11:15 A.M. "Interesting Chest X-rays"
Leo Reich, M.D., Chief Roentgenologist, V. A. Hospital, Phoenix

12:00 Noon Panel Discussion of Interesting or Diagnostic Problem X-rays
M. J. Noon, M.D., Chairman
Discussants:
Chest Surgeons – D. W. Melick, M.D., Earl Baker, M.D.
Roentgenologists – M. L. Sussman, M.D., J. Riordan, M.D.
Chest Physicians – B. L. Snyder, M.D., H. E. Kosanke, M.D.

1:00 P.M. Session Ends

NO FEE FOR REGISTRATION

All Doctors, Pulmonary Function Laboratory Personnel and Nurses are cordially invited.

M. J. NOON, M.D., Chairman
Trudeau Society Program

REGIONAL SPRING AND SUMMER MEETINGS

May 12-14, 1960
Nevada Academy of General Practice
Reno, Nevada

May 16-18, 1960
American Ophthalmological Society
Colorado Springs, Colorado

May 18-21, 1960
American Academy of General Practice
New Mexico Chapter
Ruidoso, New Mexico

June 1-3, 1960
Physical Medicine and Rehabilitation in Neuromuscular and Medical Conditions
University of Colorado Medical Center
Denver, Colorado

June 17-19, 1960
Conference on Research in Emphysema
Aspen, Colorado

June 22-25, 1960
Society of Nuclear Medicine
Estes Park, Colorado

July 5-8, 1960
Ophthalmology
Aspen, Colorado

July 11-13, 1960
Obstetrics and Gynecology
University of Colorado Medical Center
Denver, Colorado

July 14-16, 1960
Dermatology for General Practitioners
University of Colorado Medical Center
Denver, Colorado

July 18-21, 1960
New Mexico Chapter, American Academy of General Practice, Ruidoso Summer Clinic
Ruidoso, New Mexico

July 20-21, 1960
Rocky Mountain Cancer Conference
Denver, Colorado

July 27-29, 1960
American Academy of Pediatrics, Regional Meeting
Denver, Colorado

August 11-13, 1960
Medical Statistics for the Clinician
"What Numbers Can You Believe?"
University of Colorado Medical Center
Denver, Colorado

August 15-19, 1960
Western Cardiac Conference
Denver, Colorado

August 31-September 6, 1960
Pediatrics
Estes Park, Colorado

PAN AMERICAN MEDICAL ASSOCIATION

The 35th Anniversary Congress of the Pan American Medical Association will be held in Mexico City, May 2-11, 1960. Bienvenido!

The first synthetic penicillin
available
for general clinical use

FOR YOUR NEXT PATIENT WHERE PENICILLIN IS INDICATED

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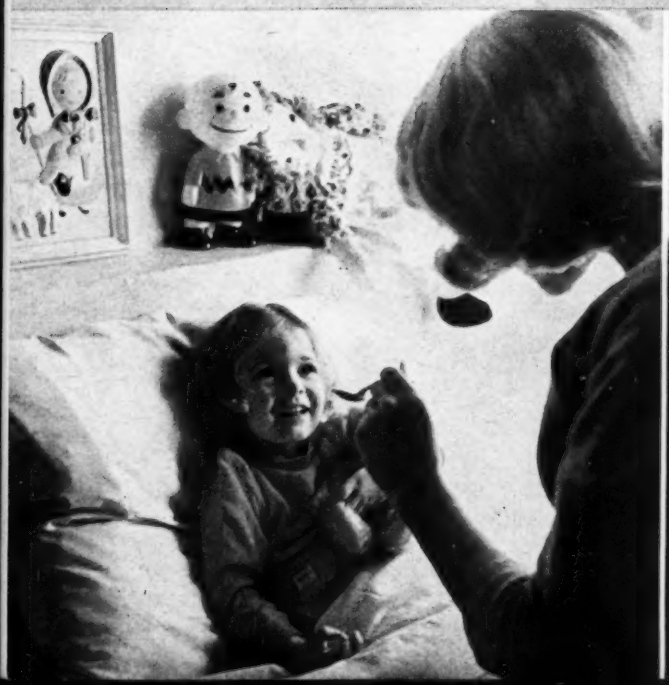
IMPROVED ANTIBIOTIC ACTION FROM ISOMERIC COMPLEMENTARITY



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in Donnalate: Dihydroxyaluminum aminoacetate affords more consistent neutralization than can diet alone. • Phenobarbital improves the possibility of your patient's resting as you told him to. • Belladonna alkaloids reduce GI spasm and gastric secretion. And by decreasing gastric peristalsis, they enable the antacid to remain in the stomach longer.

Each Donnalate tablet equals one Robalate® tablet plus one-half Donnatal® tablet: Dihydroxyaluminum aminoacetate, N. F., 0.5 Gm.; Phenobarbital (1/8 gr.), 8.1 mg.; Hyoscyamine sulfate, 0.0519 mg.; Atropine sulfate, 0.0097 mg.; Hyoscine hydrobromide, 0.0033 mg.

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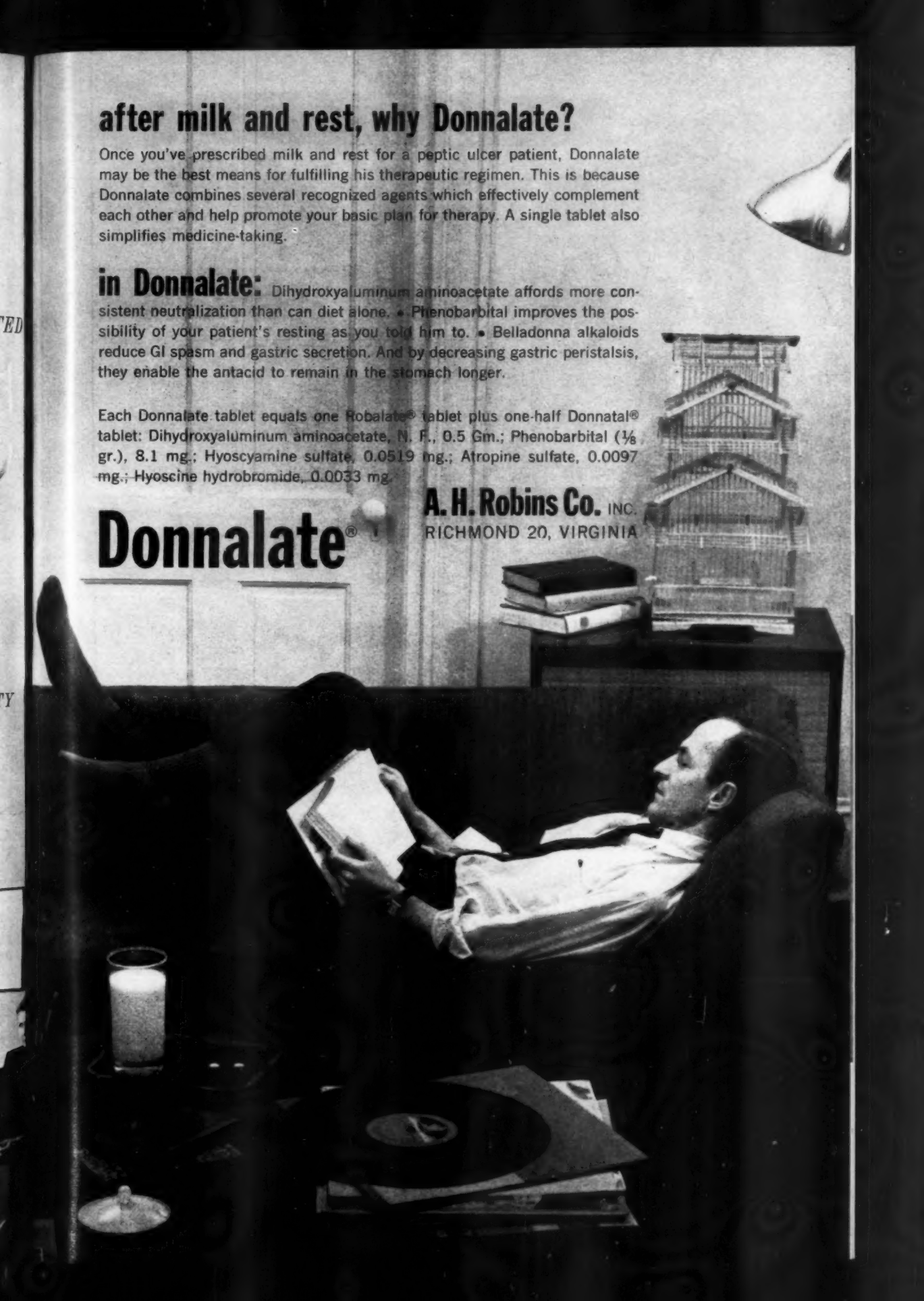

DEBORAH HOSPITAL SYMPOSIUM

The second International Symposium of the Deborah Hospital on Current Concepts in Medicine will be held April 28, 29, 30, 1960 in the Bellvue Stratford Hotel, Philadelphia, Pennsylvania.

FIFTH MEDICAL SEMINAR CRUISE

The Duke University School of Medicine is again offering doctors a chance to combine postgraduate study with an overseas vacation by sponsoring its fifth medical seminar cruise, this year to the Baltic. The "T.S. ARIADNE" will sail from Wilmington, North Carolina on June 5 and from New York City on June 8, the cruise terminating in Hamburg, Germany on June 28.

Shipboard lectures will be given as well as lectures in the medical centers at Leningrad, Helsinki, Stockholm and Copenhagen. The medical program has been approved by the American Academy of General Practice for Category I credit.

PERCENTAGE OF CIVILIAN POPULATION WITH SOME FORM OF VOLUNTARY HEALTH INSURANCE PROTECTION AS OF DECEMBER 31, 1958:

12 states — Over 75% of civilian population covered
28 states — 50-75% of civilian population covered
10 states — Under 50% of civilian population covered
(This includes Alaska and Hawaii)

Seventy-one per cent of the population of the U. S. was protected by health insurance at the end of 1958. New York was the leading state with 90.5% coverage.

USE OF INTRAMUSCULAR IRON IN PREMATURE INFANTS by Milton O. Kepler, M.D.

Intramuscular iron-dextran complex appears to offer a safe and effective method of treatment for the classic iron deficiency anemia of prematurity. (Condensed from *Archives Pediatrics*, 76:410, 1959)